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UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENTS

February 5, 1985

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

February 5, 1985 Volume 1051 Number 1

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 24, 1984.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 2, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,313,229 through 4,314,378

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,269,520, Re. S.N. 673,532, Filed Nov. 20, 1984, Cl. 400/196, CARTRIDGE FOR DYE-IMPREGNATED ENDLESS RIBBON, Gerhard Gabler, Owner of Record: *Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland,* Attorney or Agent: Ernest F. Marmorek, Ex. Gp.: 337

4,292,057, Re. S.N. 534,773, Filed Sept. 22, 1983, Cl. 55/302, TOP REMOVAL SUPPORT FOR DUST COLLECTOR BAGS, Edward A. Ulvestad, et al., Owner of Record: *Flex-Kleen Corp., Chicago, Ill.,* Attorney or Agent: Richard A. Zachard, Ex. Gp.: 177

4,347,988, Re. S.N. 648,811, Filed Sept. 7, 1984, Cl. 241/300, ANVIL ASSEMBLY FOR VERTICAL SHAFT CENTRIFUGAL IMPACT CRUSHING MACHINE, Kenneth D. Warren, et al., Owner of Record: *Portec, Inc., Oak Brook, Ill.,* Attorney or Agent: Richard J. St. John, et al., Ex. Gp.: 326

4,355,769, Re. S.N. 648,812, Filed Sept. 7, 1984, Cl. 241/300, IMPELLER SHOE ASSEMBLY, Kenneth D. Warren, et al., Owner of Record: *Portec, Inc., Oak Brook, Ill.,* Attorney or Agent: Richard J. St. John, et al., Ex. Gp.: 326

4,355,848, Re. S.N. 664,797, Filed Oct. 25, 1984, Cl. 301/37SS, WHEEL COVER FOR A VEHICLE, Takao Ookubo, et al., Owner of Record: *Nissan Motor Co., Ltd., and Hashimoto Forming Kogyo Co., Ltd., Yokohama City, Japan,* Attorney or Agent: Arthur Schwartz, et al., Ex. Gp.: 312

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,891,819, Reexam. No. 90/000,695, Requested: Dec. 21, 1984, Cl. 219/69, AUTOMATIC SET-UP ELECTROEROSION MACHINING METHOD, Werner Ullmann, et al., Owner of Record: *AG fur industrielle Elektronik Agie, Losone, Switzerland,* Attorney or Agent: Flynn & Frishauf, Ex. Gp.: 210, Requester: IJR, Inc., Yokohama, Japan

3,951,587, Reexam. No. 90/000,690, Requested: Dec. 18, 1984, Cl. 432/253, SILICON CARBIDE DIFFUSION FURNACE COMPONENTS, Richard A. Alliegro, et al., Owner of Record: *Norton Co., Worcester, Ma.,* Attorney or Agent: Arthur A. Loiselle, Jr., Ex. Gp.: 344, Norton Co., New York, N.Y.

4,102,565, Reexam. No. 90/000,691, Requested: Dec. 19, 1984, Cl. 351/214, SPLIT LAMP MICROSCOPE, Shiro Takizawa, et al., Owner of Record: *Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Finnegan, Henderson, et al., Ex. Gp.: 250, Requester: Owner

4,123,961, Reexam. No. 90/000,694, Requested: Dec. 20, 1984, Cl. 85/035, WHEEL NUT WITH WELDED CAP, Albert A. Jadach, Owner of Record: *Mesne Assignts, New York, N.Y.,* Attorney or Agent: Allen M. Krass, Ex. Gp.: 351, Requester: Key International Mftg., Inc., Southfield, Mich.

4,123,961, Reexam. No. 90/000,704, Requested: Jan. 8, 1985, Cl. 85/035, WHEEL NUT WITH WELDED CAP, Albert A. Jadach, Owner of Record: *Mesne Assignts, New York, N.Y.,* Attorney or Agent: Allen M. Krass, Ex. Gp.: 351, Requester: Microdot, Inc., Birmingham, Mich.

4,308,306, Reexam. No. 90/000,699, Requested: Dec. 24, 1984, Cl. 428/41, FABRIC CONDITIONING PRODUCTS, Ernst Stahli, Owner of Record: *Lever Brothers Co., New York, N.Y.,* Attorney or Agent: Philip Sands, Ex. Gp.: 150, Requester: Proctor & Gamble Co., Cincinnati, Ohio

4,322,827, Reexam. No. 90/000,693, Requested: Dec. 20, 1984, Cl. 367/099, RANGE EXPANDER FOR SONAR SYSTEM, Ronald G. Weber, Owner of Record: *Lowrance Electronics, Inc., Tulsa, Okla.,* Attorney or Agent: Head & Johnson, Ex. Gp.: 220, Requester: Techsonic Industries, Inc., Fufaula, Ala.

4,429,808, Reexam. No. 90/000,697, Requested: Dec. 21, 1984, Cl. 221/167, DUAL DRIVE ROTARY FEEDER, Myron I. Doty, Owner of Record: *Moorfeed Corp., Indianapolis, Ind.,* Attorney or Agent: Andrew J. Richardson, Ex. Gp.: 310, Requester: Birch, Stewart, et a l., Falls Church, Va.

4,436,050, Reexam. No. 90/000,702, Requested: Jan. 8, 1985, Cl. 114/265, SEMI-SUBMERSIBLE VESSEL, Hadar Liden, Owner of Record: *Gotaverken Arendal AB, Goteberg, Sweden,* Attorney or Agent: Cantor & Singer, Ex. Gp.: 315, Requester: Gary L. Jordan, Arlington, Va.

Errata

"All reference to Patent No. 4,481,143 to Frank M. Hauser, et al. of Oregon for 'METHOD OF SYNTHESIZING A LATE-STAGE INTERMEDIATE OF 11-DEOXYDAUNORUBI OIN AND 11-DEOXYADRIAMYCIN, AND TWO PRECURSORS TO THE OBJECT INTERMEDIATE' appearing in the Official Gazette of Nov. 6, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,484,437 to Peter Dammann, et al. of Germany for 'APPARATUS FOR FALSE TWISTING YARN' appearing in the Official Gazette of Nov. 27, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,489,151 to Frederick W. Sanders, et al. of Ohio for 'PHOTOSENSITIVE MATERIAL EMPLOYING ENCAPSULATED RADIATION SENSITIVE COMPOSITION' appearing in the Official Gazette of Dec. 18, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,490,367 to Paul Gordon of Ill. for 'BLOODED ANIMALS THEREWITH' appearing in the Official Gazette of Dec. 25, 1984 should be deleted since no patent was granted."

Submission of Corrected Drawings in Allowed Applications

When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

THERESA A. BRELSFORD,
Jan. 14, 1985. *Assistant Commissioner for Administration.*

PATENT NOTICES

Certificates of Correction for the Week of Feb. 5, 1985

4,203,206	4,418,522	4,439,992	4,458,158
4,252,760	4,419,272	4,442,109	4,458,475
4,271,582	4,420,997	4,443,079	4,459,288
4,287,188	4,421,729	4,444,193	4,459,979
4,340,481	4,423,524	4,445,033	4,460,869
4,355,646	4,423,982	4,448,094	4,463,029
4,364,419	4,425,775	4,448,590	4,463,717
4,365,999	4,426,845	4,450,134	4,464,699
4,366,074	4,427,460	4,450,894	4,465,636
4,370,485	4,428,661	4,452,227	4,465,637
4,373,836	4,429,415	4,452,751	4,465,750
4,373,966	4,430,355	4,453,118	4,465,806
4,377,685	4,430,710	4,454,169	4,465,915
4,394,736	4,431,614	4,454,190	4,466,129
4,403,770	4,431,779	4,455,081	4,466,262
4,405,898	4,433,859	4,455,266	4,467,496
4,409,211	4,435,256	4,455,592	4,470,513
4,410,518	4,435,368	4,455,593	4,471,324
4,413,950	4,436,715	4,455,651	4,473,627
4,417,052	4,437,836	4,456,584	4,478,565
4,417,131	4,438,162	4,456,727	4,478,692
4,417,268	4,439,933	4,457,570	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
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New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 22, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-11-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-06-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-18-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-23-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-1-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	9-02-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,355,744 to 3,360,799, inclusive

Plant Patents . . . . . Numbers 2,781 to 2,783 inclusive

REEXAMINATIONS

FEBRUARY 5, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,193,797 (299th)

METHOD FOR MAKING PHOTORESISTS

Abraham B. Cohen, Springfield; Robert B. Heiart, Middletown, both of N.J., assignors to E.I. DuPont de Nemours and Company, Wilmington, Del.

Reexamination Request No. 90/000,234, Jul. 30, 1982.
Reexamination Certificate for Patent No. 4,193,797, issued Mar. 18, 1980, Ser. No. 308,856, Nov. 22, 1972.
Continuation-in-part of Ser. No. 126,925, Mar. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 833,740, Jun. 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 602,291, Dec. 16, 1966, Pat. No. 3,547,730.
Int. Cl.[2] G03C *5/00, 11/12*; **G03F** *7/26*
U.S. Cl. 430—258

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

That patentability of claims **12–16** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–11** dependent on an amended claim, are determined to be patentable.

New claims **17–21** are added and determined to be patentable.

1. A process for forming a positive photoresist on a surface which comprises:

(1) applying to said surface the surface of a solid, unexposed, positive-working, photosensitive layer *which adheres directly to said surface and which is* comprised of a resist-forming photosoluble or photodesensitizable composition, the other surface of the layer having adhered thereto with low to moderate adherence a thin, flexible, polymeric film support, then in either order,

(2) exposing the layer, imagewise, to actinic radiation to form an image,

(3) stripping the film support from the resulting image-bearing layer; and then,

(4) washing away the exposed areas of the layer to form a positive resist image of thermoplastic material.

B1 4,319,365 (300th)

NO TOOL TOILET SEAT HARDWARE

Richard A. Bemis, Sheboygan, and Gordon Kelly, Elm Grove, both of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Reexamination Request No. 90/000,310, Dec. 23, 1982.
Reexamination Certificate for Patent No. 4,319,365, issued Mar. 16, 1982, Ser. No. 120,133, Feb. 11, 1980.
Int. Cl.[3] A47K *13/12*
U.S. Cl. 4—236

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2, 6, 7** and **10** are cancelled.

Claims **3–5, 8, 9** and **11–15** are determined to be patentable as amended.

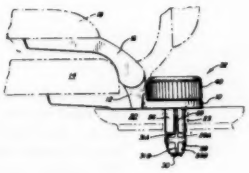
Claim **16** dependent on an amended claim, is determined to be patentable.

New claims **17–20** is added and determined to be patentable.

11. The apparatus defined in claim **[10,]** *19*, wherein said base includes an integral means for covering said top means and that portion of said removable bolt means connected to said top means, said integral means being pivotally joined to said base, said integral means enveloping said top means when said top means is in the lowered position, said integral means fairing with said base and forming a contiguous smooth structure thereby obscuring from view said top means and said removable bolt means.

19. An apparatus for attaching a toilet seat to a commode, said commode defining at least one mounting hole, comprising:

(a) a base hingedly carrying said seat for joining said seat to said commode, said base resting on said commode, the upper portion of said base having an integral hinge post for



coupling said seat to said base, the lower portion of said base carrying a stem disposed within said mounting hole, said stem having longitudinal bore extending therethrough and defining a slit extending from the lower end thereof to a point intermediate the ends thereof to split the wall of said stem along the length of said slit; and

(b) removable bold means operable from the seat side of said commode for outwardly flaring said stem against the periphery of said mounting hole to snugly engage said stem with said commode and thereby attach said base to said commode;

said apparatus further including top means, carried by said bolt means for holding said base on said commode and operatively engaging and disengaging said bolt means with said commode;

wherein said top means includes a first surface for bearing against the upper portion of said base and a second surface defining a handle graspable by the thumb and forefingers, said top means being pivotally connected to said removable bolt means and rotatable from a raised to a lowered position, said raised position being defined as that position where said second surface is to be manipulated to tighten said removable bolt means and attach said removable bolt means to said commode, said lowered position being defined as that posi-

tion with said second surface folded against the upper portion of said base.

B1 4,438,584 (301st)

TRAP FOR RATS, MICE AND OTHER VERMIN

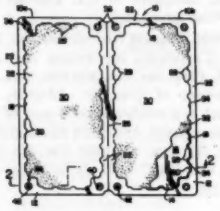
Stanley Z. Baker, Mayfield Heights, and Benjamin H. Baker, Chesterland, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio

Reexamination Request No. 90/000,558, May 18, 1984.
Reexamination Certificate for Patent No. 4,438,584, issued Mar. 27, 1984, Ser. No. 338,621, Jan. 11, 1982.
Continuation of Ser. No. 53,381, Jun. 29, 1979, abandoned.
Int. Cl.³ A01M *23/00*
U.S. Cl. 43—58

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. A trap for vermin comprised of a generally flat support formed of a non-porous, thin sheet material, said support having at least one positioning surface, at least one indented portion having a given depth below said positioning surface, and



a relatively thick layer of pressure sensitive adhesive material contained within said indented portion having a thickness of at least 1/16 inch, a plastic flow temperature above 120° F. and an upper surface; said indented portion having a greater depth than the thickness of said layer of adhesive and said positioning surface being spaced above said adhesive layer upper surface.

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 5, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

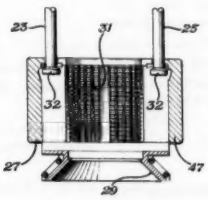
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T105,101

CASING HANDLING EQUIPMENT

William R. Hamilton, 5914 W. Airport Blvd., Houston, Tex. 77035

Filed Jun. 9, 1983, Ser. No. 502,849
Int. Cl.[3] E21B *19/02;* B66C *1/42*
U.S. Cl. 294—90
1 Sheets Drawing. 9 Pages Specification



An apparatus, for use with a traveling block and a drilling hook, for handling large diameter casing. A pair of links (**23**) (**25**) are suspended from link ears on the drilling hook. At the lower end of each link is a link connector (**32**), which preferably has a flat bottom surface and a spherical upper surface. The spherical upper surface mates with a similarly shaped surface on a removeable plate, forming a ball-and-socket type connection. Each plate has a flat upper surface which fits into a slot in an elevator (**27**). The slots for the connectors and plates are located within the circumference of the cylindrical body of the elevator, thus keeping the links oriented vertically even with large diameter elevator.

REISSUES

FEBRUARY 5, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,821
VARIABLE FUNCTION GENERATOR

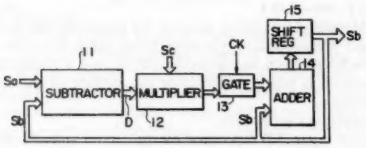
Shimaji Okamoto, Hamamatsu, Japan, assignor to Nippon Oakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Original No. 4,135,424, dated Jan. 23, 1979, Ser. No. 769,303, Feb. 16, 1977. Continuation of Ser. No. 34,925, Apr. 25, 1979, abandoned. Application for reissue Oct. 16, 1980, Ser. No. 197,615

Claims priority, application Japan, Feb. 25, 1976, 51-19743

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.13 **11 Claims**



15. An electronic musical instrument comprising:

an envelope generator which is composed of a cyclic digital filer whose transfer characteristic changes with the amount of feedback thereto;

an envelope level memory for storing its input level to control the waveshape level in accordance with the attack, decay, sustain and release of an envelope waveshape; and

an envelope speed memory for storing the filter constant of the digital filter to control the envelope speed in accordance with the attack, decay, sustain and release of the envelope waveshape,

wherein the transfer characteristic of the cyclic digital filter is controlled by changing the amount of feedback thereto with the output data of the envelope speed memory to generate a required envelope waveshape.

Re. 31,822
ABSORBENT FILMS AND LAMINATES

Robert E. Erickson, Midland, and Richard M. Krajewski, St. Louis, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 4,117,184, dated Sep. 26, 1978, Ser. No. 809,501, Jun. 23, 1977. Continuation-in-part of Ser. No. 693,260, Jun. 7, 1976, abandoned. Application for reissue Mar. 24, 1980, Ser. No. 132,928

Int. Cl.³ A61F *13/18*

U.S. Cl. 128—156 **32 Claims**

26. The method of making a disposable liquid absorbent pad for use as a diaper, sanitary napkin and the like comprising the steps of:

forming a film of polymeric material capable of forming a gel upon application of liquid thereto providing a crinkled absorbent sheet having apex portions for receiving said film there across; and

producing a controlled amount of gel on said film forming a limited bond with said sheet at the apex portions facilitating wicking of liquid applied to the pad thus formed through voids between apex portions of said crinkled absorbent sheet.

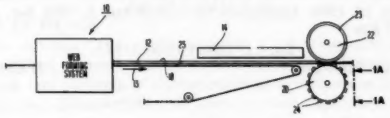
Re. 31,823
CHEMICAL MILLING OF HIGH TUNGSTEN CONTENT SUPERALLOYS

Robert E. Fishter, Boca Raton; Henry Lada, and Brian A. Manty, both of Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Original No. 4,353,780, dated Oct. 12, 1982, Ser. No. 192,667, Oct. 1, 1980. Application for reissue Oct. 11, 1983, Ser. No. 540,933

Int. Cl.³ C23F *1/00*; C09K *13/08*

U.S. Cl. 156—664 **5 Claims**



1. The method of chemical milling a superalloy having a base metal selected from the group consisting of nickel and cobalt, and a tungsten content of greater than 6 weight percent, which comprises the use of the etchant consisting essentially by volume percent of 40–60 concentrated HNO_3, [0.3–0.8] *0.6–0.8* concentrated HF, and [30] *40–70* H_2O, together with at least 0.008 moles/liter $CuSO_4$ and 0.0016–0.025 moles/liter $FeCl_3$.

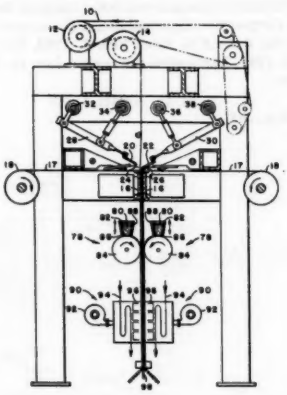
Re. 31,824
SEPARATOR MEMBRANES FOR ELECTROCHEMICAL CELLS

Vincent F. D'Agostino, Huntington Station; Joseph Y. Lee, Lake Grove, and Joseph C. Sentisi, Ozone Park, all of N.Y., assignors to RAI Research Corporation, Hauppauge, N.Y.

Original No. 4,230,549, dated Oct. 28, 1980, Ser. No. 802,035, May 31, 1977. Application for reissue Sep. 30, 1982, Ser. No. 431,172

Int. Cl.³ C08F *259/08, 255/02, 2/46*

U.S. Cl. 204—159.17 **30 Claims**



1. An improved process for the preparation of a membrane suitable for use in electrochemical cells comprising:

(a) forming a grafting solution comprising a hydrophilic monomer, and [an organic] *a* solvent *selected from the*

group consisting of an organic solvent which incorporates a transfer agent, and a chlorinated hydrocarbon;

(b) placing said solution in contact with an inert polymeric film;

(c) irradiating said contacted film to graft polymerize said hydrophilic monomer onto the film, while inhibiting homopolymerization of said graft monomer; and

(d) contacting said irradiation grafted film with an emulsifier to reduce the electrolytic resistance of said membrane.

Re. 31,825

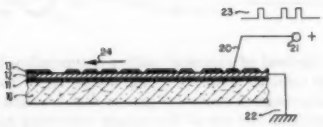
METHOD OF MAKING NONWOVEN FABRIC AND PRODUCT MADE THEREBY HAVING BOTH STICK BONDS AND MOLTEN BONDS

Charles R. Mason, Hammonton; David K. Osteen, Williamstown, and Lawrence Vaalburg, Vineland, all of N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Original No. 4,315,965, dated Feb. 16, 1982, Ser. No. 161,270, Jun. 20, 1980. Application for reissue Jan. 3, 1984, Ser. No. 567,809

Int. Cl.³ D04H *1/54, 3/14*

U.S. Cl. 428—198 **27 Claims**



1. A method of autogenously bonding a nonwoven web formed predominantly of thermoplastic fibers, characterized by the steps of directing heat into the web from only one surface thereof to preheat the web, and then directing the preheated web through a bonding nip formed between opposed rolls, one of said rolls being hotter than the other roll, being capable of heating the web surface it engages to a temperature above the melt point of the thermoplastic fibers and being positioned to engage the surface of the web opposite the one into which heat was directed during the preheating operation; said web being preheated by means completely independent of the opposed rolls that form the bonding nip.

14. A nonwoven web made according to the method of claim **1**.

Re. 31,826

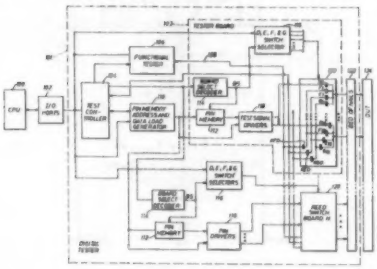
HOT MELT ADHESIVE BONDED PILE FABRICS

Greville Machell, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Original No. 4,371,576, dated Feb. 1, 1983, Ser. No. 304,486, Sep. 22, 1981. Application for reissue Jun. 10, 1983, Ser. No. 503,206

Int. Cl.³ D04H *11/08*

U.S. Cl. 428—92 **5 Claims**



1. A hot melt adhesive bonded pile fabric which comprises a liquid-permeable base layer, a pile forming yarn adjacent to but not tufted through the base layer in pile forming fashion, the pile forming yarn having been bonded to the base layer by means of a hot melt adhesive applied to the back of said base layer and forced through the base layer into contact with said pile forming yarn.

Re. 31,827

METALIZED RECORDING CARRIER FOR RECORDING INSTRUMENTS, AND METHOD OF ITS MANUFACTURE

Richard Höhn, Stuttgart; Werner Jung, Waiblingen; Gerhard Winter, Remshalden, and Siegfried Woerner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Original No. 4,371,879, dated Feb. 1, 1983, Ser. No. 261,611, May 7, 1981. Application for reissue Nov. 25, 1983, Ser. No. 555,295

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017450

Int. Cl.³ G01D *15/24*

U.S. Cl. 346—135.1 **19 Claims**

1. Metalized recording medium for recording instruments of the burn-out recording type upon being subjected to an electrical discharge from an electrode (**20**) having a contacting surface which is being passed over the surface of the medium, comprising

a substrate carrier (**10**);

a metal layer (**12**) supported by the carrier and of a thickness permitting burning-off of the metal layer when positioned beneath an energized electrode (**20**);

and a low-friction surface layer applied over said metal layer,

wherein, in accordance with the invention,

the low-friction slide surface layer (**13**) is formed, prior to contact with an energized electrode, of discontinuous islands [smaller than the contacting surface of the electrode (**20**)] to permit easy gliding of the electrode (**20**) over the surface of the carrier without marring or scratching or leaving tracks on the carrier upon relative movement between the carrier and the electrode while providing for electrical connection of the electrode with said metal layer (**12**).

Re. 31,828

IN-CIRCUIT DIGITAL TESTER

Douglas W. Raymond, Orinda, and Thomas C. Garrett, Walnut Creek, both of Calif., assignors to Zehntel, Inc., Concord, Calif.

Original No. 4,216,539, dated Aug. 5, 1980, Ser. No. 903,160, May 5, 1978. Application for reissue Aug. 2, 1982, Ser. No. 403,973

Int. Cl.³ G01R *31/28*

U.S. Cl. 371—20 **82 Claims**

61. Apparatus adapted for use with a central processor for the in-circuit testing during test cycles of the electrical properties of components interconnected at electrical nodes of a circuit under test, the components being responsive to test signals having first, second and disconnect logic states, said apparatus having a response signal line for monitoring a response signal from the circuit under test during a test cycle, the apparatus comprising:

(a) a plurality of programmable digital test-signal generators, each including addressable memory locations for storing digital signals representative of a test signal to be applied to the circuit under test,

(i) each of said test signals comprising an independent, selectively variable, uninterrupted sequence of said first, second and disconnect logic states,

(ii) each test signal being applied to selected nodes of the circuit under test independently of processor control during the test cycle; and

(b) a test controller operatively coupled to the central processor, for generating a test cycle wherein selected ones of said digital test-signal generators supply test signals to said circuit, thereby to cause the circuit under test to produce a response signal on a response signal line.

PLANT PATENTS

GRANTED FEBRUARY 5, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,400

CHRYSANTHEMUM PLANT NAMED CAVALCADE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 16, 1982, Ser. No. 419,006
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., known by the cultivar name of Cavalcade, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of incurved capitulum form; standard capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 130 to 150 mm. at maturity; uniform nine (9) week flowering response; medium (55 to 70 cm.) plant height when grown single stem; with no long days and a low temperature tolerance of 13° C. (55° F.) for initiation and development under controlled short days with a continuous dark period of 12 to 14 hours.

5,401

CHRYSANTHEMUM PLANT NAMED VENTURE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 4, 1983, Ser. No. 463,922
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., named Venture, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; deep yellow ray floret color; diameter across face of capitulum ranging from 65 to 75 mm. at maturity; uniform nine week flowering response; tall plant height when grown single stem; 12 to 15 cm. peduncles on open, normally terminal sprays, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

5,402

CHRYSANTHEMUM PLANT NAMED ECLIPSE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 21, 1983, Ser. No. 506,504
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., named Eclipse, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of semi-incurved capitulum form; decorative capitulum type; deep lemon yellow ray floret color; diameter across face of capitulum ranging from 100 to b **120** mm. at maturity; uniform nine week flowering response; medium plant height and spreading branching pattern.

5,403

CHRYSANTHEMUM PLANT NAMED RIOT

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 4, 1983, Ser. No. 463,923
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., named Riot, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; red bronze ray floret color; diameter across face of capitulum ranging from 60 to 75 mm. at maturity; uniform nine week flowering response; medium plant height when grown single stem; 10 to 12 cm. peduncles on open, normally terminal sprays, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

PATENTS

GRANTED FEB. 5, 1985

ERRATA

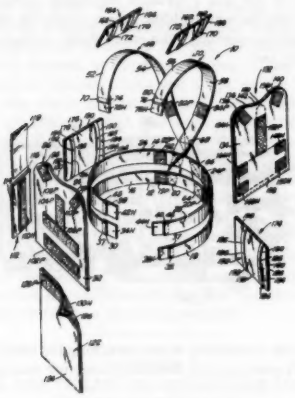
For CLASS	See PATENT NO.
126–242	4,497,308
180–335	4,497,503
384–615	4,497,523
350–425	4,497,617
534–695	4,497,734
534–603	4,497,735
534–855	4,497,736
514–009	4,497,799
514–002	4,497,800
514–015	4,497,801
514–008	4,497,802
514–450	4,497,803
514–092	4,497,804
514–179	4,497,805
514–189	4,497,806
514–222	4,497,807
514–222	4,497,808
514–206	4,497,809
514–222	4,497,810
514–231	4,497,811
514–211	4,497,812
514–166	4,497,813
514–258	4,497,814
514–274	4,497,815
514–300	4,497,816
548–150	4,497,817
514–397	4,497,818
514–397	4,497,819
514–432	4,497,820
514–302	4,497,821
514–592	4,497,822
514–512	4,497,823
514–166	4,497,824
514–556	4,497,825
514–567	4,497,826
514–381	4,497,827
514–603	4,497,828
514–672	4,497,829
514–277	4,497,830
514–717	4,497,831
383–126	4,498,192
375–091	4,498,198

PATENTS

GRANTED FEBRUARY 5, 1985

GENERAL AND MECHANICAL

4,497,069
UNIVERSALLY FITTING, MODULAR BALLISTIC GARMENT
Harold N. Braunhut, 200 Fifth Avenue, New York, N.Y. 10010
Filed Jan. 20, 1983, Ser. No. 459,369
Int. Cl.³ F41H *1/02*
U.S. Cl. 2—2.5 **13 Claims**



1. A universally fitting, modular ballistic garment comprising:

a chest protector fabricated from flexible ballistic material;

harness means for fitting said chest protector onto body torsos of varied sizes, said harness means including at least one side belt and a pair of shoulder straps;

first securing means for removably securing said side belt and shoulder straps to said chest protector so that said chest protector can be suitably positioned on a wearer's body;

said first securing means including first Velcro-type fasteners provided on inwardly facing surfaces at ends of said side belt and at ends of said shoulder straps, and mating second upper and lower Velcro-type fasteners provided on outwardly facing surfaces of said chest protector for receiving in engagement thereon, respectively, said first Velcro-type fasteners of said shoulder straps and said side belt;

plate means to reduce an impact effect of a bullet as the bullet hits a central section of said chest protector;

said plate means including a pouch fabricated from flexible ballistic material, and a trauma plate of ballistic steel material secured within said pouch, said pouch having a smaller surface than outer surface area of said chest protector;

second securing means removably securing said pouch to a central portion of said outer surface area of said chest protector in a position to protect particular parts of the wearer's body; and

said second securing means including a third Velcro-type fastener provided on an inwardly facing surface of said pouch, and a mating fourth Velcro-type fastener provided on an outwardly facing surface of said central portion of said chest protector;

said fourth Velcro-type fastener being disposed between said second upper and lower Velcro-type fasteners, and said fourth Velcro-type fastener being disposed perpendicular to said second lower Velcro-type fastener which receives said first Velcro-type fasteners of said side belt so that said pouch can be properly positioned to protect said particular parts of the wearer's body when fitted onto body torsos of varied sizes.

4,497,070
UNITARY LEG AND FOOT PROTECTIVE DEVICE
Soo S. Cho, Miami, Fla., assignor to Macho Products, Inc., Palm Bay, Fla.
Filed Dec. 16, 1982, Ser. No. 450,403
Int. Cl.³ A43B *5/00;* **A41D** *13/08*
U.S. Cl. 2—22 **19 Claims**

1. An integral leg and foot protective device of soft energy absorbing material to be worn by a human comprising

a lower portion having a concave configuration for covering the top and sides of the foot of the wearer;

a middle portion having a concave configuration for covering the front and sides of the ankle of the wearer;

an upper portion covering the shin of the wearer;

first strap means secured adjacent one end of said lower portion;

mating securing means attached to opposite ends of said first strap means, said first strap means being of a length so as to cross over the top of said lower portion, underneath said lower portion, and across the top of said lower portion including a section of said first strap means, with the free end of said first strap means being secured to said one end of said first strap means;

second strap means secured at one end to said upper portion;

mating securing means attached to opposite ends of said second strap means, said second strap means being of a length to pass about said upper portion with the free end of said second strap means being secured to said one end of said second strap means;

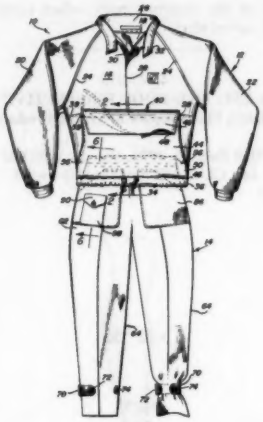
a plurality of perforations through said lower portion; and

a lace of sufficient length to pass through said perforations and under said first portion with the ends of said lace being tied together below the inner surface of said lower portion.

4,497,071
EXERCISE GARMENT
Richard S. Bell, Gloucester, Mass., assignor to Mighty-Mac, Inc., Gloucester, Mass.
Filed Feb. 18, 1982, Ser. No. 350,321
Int. Cl.³ A41D *1/00*
U.S. Cl. 2—94 **7 Claims**

1. A garment comprising a jacket including a front panel, a combined vertically opening pouch and double side entry pocket secured to said front panel, said combined pouch and pocket including inner and outer panels secured peripherally together except for top edge portions, zipper closure means extending along the top edge portions of the inner and outer panels to provide access to the interior of the pouch, means securing the bottom edge portion of the pouch to the front

panel and means securing the inner panel to the front panel of the jacket in vertically spaced relation to the bottom portion of the pouch with the side edges of the pouch being free of the



front panel thereby providing a pair of side entrances into a pocket defined by the front panel of the jacket and the inner panel of the pouch.

4,497,072

POROUS COATED GLOVE

Hiroshi Watanabe, Kurume, Japan, assignor to Towa Glove Co., Ltd., Kurume, Japan

Filed Nov. 17, 1982, Ser. No. 442,374
Claims priority, application Japan, Nov. 24, 1981, 56-189480
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 A **11 Claims**

1. A porous hand covering comprising a fabric glove base and a rubber or resin coating layer thereon, said coating layer including gripping projections projecting outward from said glove base and a plurality of depressions in said coating layer wherein said depressions form coating layer-free areas on said glove base whereby the portions of said glove base containing said depressions permit air penetration and ventilation to the inside of said glove and provide said glove with flexibility.

4,497,073

LACROSSE GLOVE

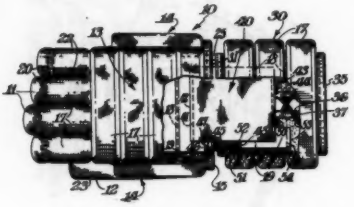
Warren D. Deutsch, 33 Mill Dam Rd., Smithtown, N.Y. 11787

Filed Jun. 29, 1983, Ser. No. 508,866
Int. Cl.³ A41D *13/08, 19/00*
U.S. Cl. 2—161 A **3 Claims**

1. A lacrosse glove comprising:

(1) a hand receiving portion adapted to receive the user's hand and to substantially envelope the hand from the ends of the fingers and thumb to the edge of said hand receiving portion horizontally encircling the wrist of the user, the hand receiving portion including a palm area which envelopes the hand proper of the user, finger stalls which open into the palm area and receive the user's fingers, a thumb stall which opens into the palm area and receives the user's thumb, and padding means overlying and securely attached to the back and sides of the hand receiving portion and extending uninterrupted from the ends of the fingers and thumb to the edge encircling the user's wrist;

(2) a cuff portion extending generally around at least the lower part of the user's forearm, having a lower horizontal edge adjacent the user's wrist, an upper horizontal edge defining the upper extent of the cuff portion around the user's forearm and two vertical edges adjacent the inside of the user's forearm adjustably connected with removable lacings, padding means overlying and securely attached to essentially the entire outer surface of the cuff portion; and



(3) a flexible connecting means attaching the hand portion to the cuff portion, said flexible connecting means comprising:

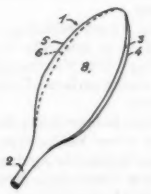
a padded portion underlying the opening adjacent the wrist of the user and protecting the wrist area between the edge of the hand receiving portion and the lower horizontal edge of the cuff portion, said padded portion having a lower horizontal edge securely attached to the inside of the hand receiving portion below the edge of the hand receiving portion encircling the wrist and an upper horizontal edge underlying the cuff portion adjacent its lower horizontal edge, said upper horizontal edge being securely attached to the lower horizontal edge of an elastic portion having an upper horizontal edge securely attached to the inside of the cuff portion generally on a line horizontally between the lower and upper horizontal edges of the cuff portion.

4,497,074

ORGAN PROSTHESES

Pierre Rey, Thorigny; Jacqueline Leandri, Paris, and Clément Abbou, Fontenay-sous-Bois, all of France, assignors to Agence National de Valorisation de la Recherche (ANVAR), Seine, France

Division of Ser. No. 784,377, Apr. 4, 1977, abandoned. This application May 30, 1979, Ser. No. 43,677
Claims priority, application France, Apr. 5, 1976, 76 09794; Mar. 10, 1977, 77 07091
Int. Cl.³ A61F *1/00, 1/24*
U.S. Cl. 3—1 **44 Claims**



1. An organ prosthesis, having an internal surface adapted to

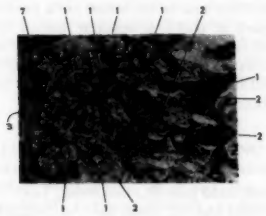
be in contact with body fluids, formed of a flexible material having an internal surface state devoid of roughness, whereby formation of concretions and deposits, fibrinous coagulum and calculi or lithiasis, during use of the organ prosthesis, due to the roughness, is avoided, and obtained by molding, said organ prosthesis being formed by forming, on a preformed support in the shape of the prosthesis, a coating of a sol selected from the group consisting of gelose and gelatin giving, on cooling, a gel having a surface state approximately the same as the liquid-air interface of gelose or gelatin in solution at its surface not adjacent the support, said coating being formed by dipping, spraying, coating, varnishing or lacquering the sol on the support, forming said gel from said sol, then forming a hardenable flexible material coating of silicon elastomer compatible with the body liquids and tissues on the gel, the flexible material coating being formed by dipping, flowing or spraying, the flexible material coating taking the shape of the preformed support in the shape of the prosthesis, then hardening the hardenable flexible material, the hardened flexible material having a surface state adjacent said gel that is devoid of roughness, and separating the hardened flexible material and the preformed support, the hardened flexible material being the organ prosthesis, wherein the preformed support is in the shape of a ureter prosthesis, a urethra prosthesis, a vascular prosthesis, a valvular prosthesis, a cardiac prosthesis, or a bladder prosthesis, whereby the organ prosthesis of the hardened flexible material is, respectively, a ureter prosethesis, a urethra prosthesis, a vascular prosthesis, a valvular prosthesis, a cardiac prosthesis or a bladder prosthesis.

4,497,075

FILLER FOR FILLING IN DEFECTS OR HOLLOW PORTIONS OF BONES

Shigeo Niwa; Kazuhiko Sawai; Shinobu Takahashi, all of Aichi; Mikiya Ono, Saitama; Yoshiaki Fukuda, Saitama; Hiroyasu Takeuchi, Saitama, and Hideo Tagai, Tokyo, all of Japan, assignors to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 191,894, Sep. 29, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,765
Claims priority, application Japan, Oct. 8, 1979, 54-128821
Int. Cl.³ A61F *1/24*; C01B *25/32*
U.S. Cl. 3—1.9 **12 Claims**



1. A filler for filling in defects or hollow portions of bones to coalesce with the bone tissues wherein said filler is fluidized or plasticized by the addition of one selected from the group consisting of water and an isotonic sodium chloride solution, consisting essentially of powders of a calcium phosphate compound having the apatite crystalline structure of each crystallite size of 400 Å or larger and of each crystal grain size of 3 microns or smaller, said calcium phosphate compound being represented by the following general formula of

$$Ca_m(PO_4)_nOH \quad (1.33 \leqq m/n \leqq 1.95);$$

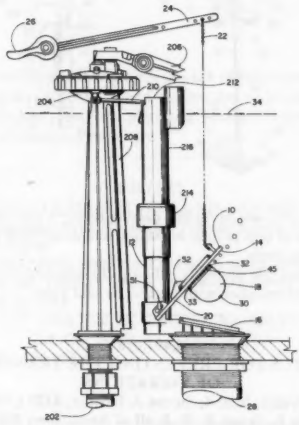
said calcium phosphate compound being prepared by baking at a temperature of from 700° C. to 1250° C., and said calcium phosphate compound having a calcium ion concentration of from 3 to 5 ppm and a phosphoric ion concentration of from 1 to 4 ppm when dissolved into an isotonic sodium chloride solution and measured after 1 to 72 hours.

4,497,076

DUAL FLUSH SYSTEM FOR CONTROLLING FLUSH WATER IN WATER CLOSET

Donald E. Sullivan, 1493 Fahlander Dr. S., Columbus, Ohio 43229

Filed Feb. 24, 1983, Ser. No. 469,256
Int. Cl.³ E03D *1/34*
U.S. Cl. 4—392 **7 Claims**



1. An improved adjustable discharge valve closure of the type providing a reduced water volume flush for the tank of a water closet, said discharge valve closure including a sealing portion and a buoyancy chamber portion attached to a mounting arm member which in turn is mounted in the tank for pivotal movement of the valve closure into and out of sealing engagement with the discharge valve seat, said buoyancy chamber portion, in the closed operable position of the valve closure, including a relatively lower drain hole and a relatively higher bleeder port formed through a wall of the buoyancy chamber portion below the area of said sealing engagement when said closure is in its closed position

wherein the improvement permits improved manual adjustment and control of the water volume of a flush and comprises a water inlet port formed through a wall of said buoyancy chamber and in said closed position of the closure positioned below the area of said sealing engagement and above said drain hole and, in the opened position of said valve closure, positioned lower than said bleeder port.

4,497,077

PORTABLE BASIN APPARATUS

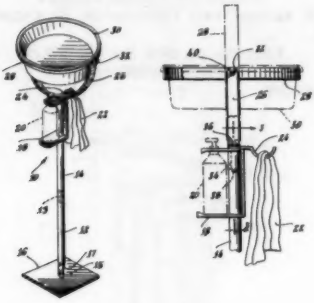
Alfred M. Provost, Feeding Hills, Mass., assignor to Anthony J. Izzo, Westport, Conn. and Orlin Sutter, West Springfield, Mass.

Filed May 20, 1983, Ser. No. 496,419
Int. Cl.³ A47K *5/00, 5/702*
U.S. Cl. 4—628 **10 Claims**

1. A portable wash stand device comprising a vertical support having at least one constituent member and a base means adapted to impart positional stability to said device on, and removeable affixation of it to, the surface of which it is to be used,

and a basin support means which is adapted for removeable affixation to the top of said vertical support in the form of a substantially semi-circular upward facing yoke oriented

with the pivot line described by its top-most ends passing through and normal to the axis of said vertical support and has a circular basin support member whose outside diameter is slightly less than the inside diameter of said semi circle and is pivotally affixed to the topmost ends of said



yoke with said pivot line passing through the center of the points of said pivotal affixation and describing a diameter of said circle,

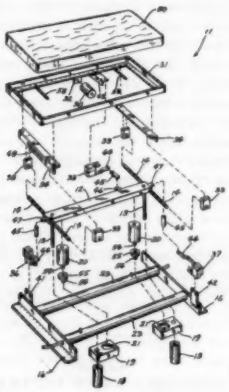
and means for pivotally affixing the position of said basin support member with respect to said yoke.

4,497,078

APPARATUS FOR PREVENTING THE TRANSMISSION OF VIBRATIONS

Jerald M. Vogel, R.R. 4; Steven J. Hooper, 4329 L-Swing #20, and Jerry L. Hand, R. R. 3, all of Ames, Iowa 50010

Filed Feb. 14, 1983, Ser. No. 466,089
Int. Cl.³ A47C *19/16*
U.S. Cl. 5—118 **15 Claims**



1. Apparatus for preventing the transmission of vibrations from one object to another comprising:

a first frame;

a second frame;

a rod attached to one of said first frame and said second frame;

bushing means for slideably receiving said rod, said bushing means being adapted to be attached to the other of said frames;

fluid supply means for supplying a compressible, nonhydraulic fluid under pressure;

force transmitting means attached at one end thereof to one of said frames for sealingly receiving said fluid under pressure;

abutment means associated with said other frame for contacting the other end of said force transmitting means for causing said frames to be pushed apart when fluid under pressure is allowed to enter said force transmitting means;

means for causing said frames to move closer together when fluid pressure is relieved in said transmitting means;

valve means connected between said fluid supply means and said force transmitting means for selectively allowing the fluid to flow selectively from said fluid supply means to said force transmitting means in one position thereof, from said force transmitting means to atmosphere in a second position thereof or to allow no flow at all to or from said force transmitting means in a third position of said valve means;

means operatively connected to said valve means for causing said valve means to be at said third position thereof when said frames are a predetermined distance apart, at said first position thereof when said frames are closer together than said predetermined distance and at said second position when said frames are farther apart than said predetermined distance;

a third frame;

a second rod operatively attached to one of said first and third frames, said second rod being disposed transversely with respect to the first said rod;

second force transmitting means operatively attached at one end thereof to said frame at one end thereof and to said third frame at the other end thereof;

second bushing means operatively attached to the one of said first and third frames which does not have a second rod attached thereto for slideably receiving said second rod;

means for causing said first and third frames to move closer together when fluid pressure is relieved in said second force transmitting means;

second valve means for selectively connecting said second force transmitting means to said fluid supply means in a first position thereof, from said second force transmitting means to atmosphere in a second position thereof or to allow no flow at all to or from said second force transmitting means in a third position thereof; and

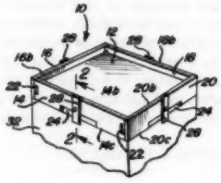
means connected to said second valve means for causing said second valve means to be at said third position thereof when said first and third frames are a predetermined distance apart, at said first position thereof when said first and third frames are closer together than said predetermined distance thereof and at said second position thereof when said first and third frames are farther apart than said predetermined distance thereof.

4,497,079

BEEHIVE AERATOR

Henry G. Kettl, 3930 Inez St., Beaumont, Tex. 77706

Filed Oct. 12, 1983, Ser. No. 542,253
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—1 **10 Claims**



9. In combination with a beehive, a cover for support on the top super of the hive, the cover being capable of being sup-

ported on the top super in alternative mutually inverted positions, the cover including means for providing aeration at the top of the when supported in one of said positions and substantially no aeration at the top of the hive when supported in the other of said positions, wherein the cover comprises a peripheral frame and a cover sheet filling the frame and located intermediate top and bottom edges of the frame on one or the other of which edges the cover is supported on the top super of the hive in the respective alternative positions, the means for providing ventilation comprising ventilating openings in the frame between the cover sheet and one of said edges only.

4,497,080

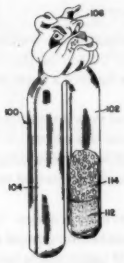
BOOT TREE

Elizabeth Inspector, 14 Saint Malo, Pine Brook, N.J. 07058

Filed Mar. 10, 1983, Ser. No. 473,780

Int. Cl.³ A43D *03/14*

U.S. Cl. 12—128 R **8 Claims**



1. An ornamental article for maintaining, when in use, a pair of footwear in adjacent relationship, said article comprising a pair of tubular members arranged adjacent each other and joined together at one common end thereof, an ornamental head portion attached said one common end of said pair of tubular members, means within a portion of said tubular members at an end opposite the common end thereof for lowering the center of gravity of said article whereby said article can be maintained in a vertical orientation when not in use, said means for lowering the center of gravity of said article comprising a flowable material, and means within the remainder of said tubular members for maintaining the tubular shape of said tubular members whereby said tubular members can be inserted into a portion of the interior of said pair of footwear for maintaining said pair of footwear in adjacent relationship.

4,497,081

APPARATUS FOR TREATING PRINTING PLATES

Paul Hecke; Arnulf Bürger, both of Ludwigshafen, and Heinz-Ulrich Werther, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

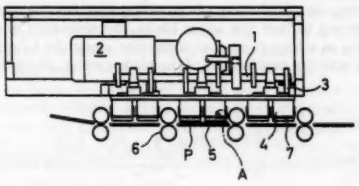
Filed May 31, 1983, Ser. No. 499,264

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221257

Int. Cl.³ G03D *13/00*

U.S. Cl. 15—102 **3 Claims**

1. An improved apparatus for treating a printing plate produced by a photochemical process, in particular a printing plate produced from photopolymerizable substances and exposed to actinic light, in which the plate to be treated is transported from a loading station, via a washout station, a cleaning station and a drying station, to an unloading station by means of a system of driven rollers covered with velour or textile fabrics, and in which, during transportation through the washout and cleaning station, the exposed side of the plate faces upwards and the plate is below the level of the washout liquid, said improvement comprising: at least one flat washout element is arranged facing the exposed side of the plate passing through the apparatus, said washout element being reciprocable to and fro at right angles to the direction of transport of the plate and having an underside and sidewalls extending at right



angles to said direction; a groove in each of said sidewalls; and a long-fibered fabric stretched across the underside of said washout element facing the plate and fastened in said grooves by means of clamping members.

4,497,082

CLEANING CLOTH FOR GUN AND CANNON BORES

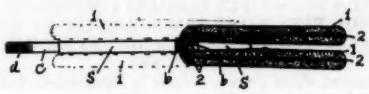
Fukuhei Kogasaka, 8-4 Chiugencho, Fukushima-shi, Fukushima-ken 960, Japan

PCT No. PCT/JP81/00032, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/02942, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 19, 1981, Ser. No. 433,211

Int. Cl.³ B08B *9/02;* **F41C** *31/00*

U.S. Cl. 15—104.165 **4 Claims**



1. A cleaning cloth body for cleaning the inside of a barrel of a firearm, said cleaning cloth body comprising:

two boards of foamed urethane resin, said two boards being molded in a substantially rectangular configuration, a reinforcing means interposed between said two boards, said two boards being secured to said reinforcing means on opposite sides of said reinforcing means, an opening defined by said two boards and said reinforcing means located at the center of said two boards and said reinforcing means, said opening being adapted to receive and be held at one end of a cleaning utensil, said cleaning utensil being threaded through the barrel of a firearm to be cleaned to pull said two boards and said reinforcing means through the barrel of the firearm for removing foreign particles adhering to the inside of the barrel after discharge of the firearm, and the combined thickness of said two boards and said reinforcing means being greater than the diameter of the barrel of the firearm to be cleaned when said two boards and said reinforcing means are folded over onto themselves at said opening.

4,497,083

HEATED WINDSHIELD WIPER

Edward M. Nielsen, Jr., P.O. Box 992, and Walter T. Caffrey, 2170 23rd Ave., both of Columbus, Nebr. 68601

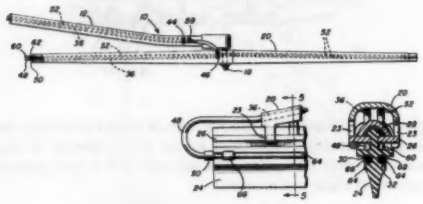
Filed Sep. 14, 1983, Ser. No. 532,061

Int. Cl.³ B60S *1/04*

U.S. Cl. 15—250.06 **6 Claims**

1. A windshield wiper structure comprising a wiper arm having means at one end for attaching the arm to a wiper terminal of a vehicle, a wiper blade carrier on the other end of

the wiper arm, a wiper blade carried by the blade carrier, and resistance wiring extending along the length of the wiper arm, through the blade carrier and along the length of the wiper blade, the wiring having a connector adjacent said one end of the wiper arm for connection into a vehicle electrical system, whereby electrical energy from said system may be supplied to the wiring to heat the wiper blade, the resistance wiring extending as a loop from said connector along the length of the wiper arm to a central part of the blade carrier, along the blade



carrier to one end thereof, back along the length of the blade carrier to the other end thereof, to one end of the blade, along the length of the blade to the other end thereof, back along the length of the blade to said one end of the blade, back to said other end of the blade carrier, back to said central part of the blade carrier, and back along the wiper arm to the other end of the loop formed as a ground connection, and wherein the loop includes wiring connectors at said one end of the blade for providing detachment and replacement of the blade.

4,497,084

WINDSCREEN-WIPER ELEMENT COMPRISING A WINDSCREEN-WIPER ARM SUBJECTED TO THE ACTION OF A COMPRESSION SPRING BY MEANS OF A STOP BRACKET

Jean Auzolat, Paris, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

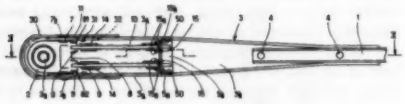
PCT No. PCT/FR82/00206, § 371 Date Mar. 31, 1983, § 102(e) Date Mar. 31, 1983, PCT Pub. No. WO83/02094, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 9, 1982, Ser. No. 482,996

Claims priority, application France, Dec. 11, 1981, 81 23200

Int. Cl.³ B60S *1/40*

U.S. Cl. 15—250.34 **20 Claims**



1. A windshield wiper arm for connection between the output shaft of a wiper drive mechanism and a windshield wiper, said wiper arm comprising, a head adapted to be fixed on the output shaft, a U-shaped casing pivotally connected to said head for pivotal movement about an axis transverse to the drive shaft so that said casing can pivot toward and away from a windshield to be wiped by the windshield wiper, said U-shaped casing comprising a web and side flanges projecting from the web, a bracket extending between said flanges, compression means between said bracket and said head, means pivotally connecting one end of the compression means to said head for pivotal movement about an axis parallel to said transverse axis, said compression means engaging said bracket and exerting a force on the casing in a direction to cause the casing to pivot toward the windshield, said bracket being generally perpendicular to the direction of the force exerted by the compression means, and abutment means for preventing movement of the bracket under the action of the compression means, and for transmitting the force of the compression means to the casing, said abutment means comprising projections deformed inwardly of the casing from said flanges, said projections engaging opposite sides of said bracket.

4,497,085

APPARATUS FOR FEEDING MODULES OF SEED COTTON INTO DISPERSER APPARATUS

Donald W. Van Doorn; James B. Hawkins; Tommy W. Webb, and William A. Harmon, Jr., all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed Oct. 12, 1982, Ser. No. 433,687

Int. Cl.³ D01G *7/08*; D01B *1/38*; B02C *9/04*

U.S. Cl. 19—80 R **16 Claims**

1. Apparatus for substantially uninterruptedly dispersing discrete modules of seed cotton or the like comprising:

(a) a receiving station having a supporting surface for modules,

(b) a disperser mounted in position to engage the ends of said modules and disperse the same,

(c) a low profile shuttle vehicle adapted for reciprocable travel along said receiving station toward and away from said disperser, and

(d) a reversible conveyor carried by said vehicle and adapted for reciprocable movement relative thereto in the direction of travel of said vehicle with said vehicle and its conveyor being of a height and constructed and arranged to travel under, lift for transport, and transport said modules sequentially endwise into said disperser and to pick-up and discharge each of said modules from either end of said conveyor.

4,497,086

REGULATING METHOD AND SYSTEM FOR PRODUCING A UNIFORM SLIVER IN A CARDING MACHINE

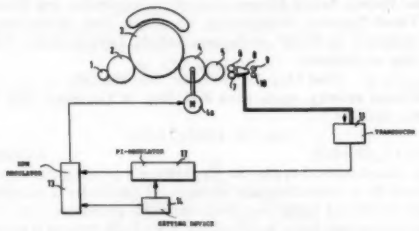
Rolf Guse, Reutlingen, and Norbert Tauber, Eningen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 437,163

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143285

Int. Cl.³ D01G *15/40*, *15/48*; D01H *5/42*

U.S. Cl. 19—105 **14 Claims**



1. A regulating method for obtaining a uniform sliver delivered by a carding machine having a drive, comprising the following steps:

(a) generating a signal representing a deviation of actual properties of the sliver from desired properties thereof;

(b) applying said signal by a PI-regulator to said drive for

regulating said drive as a function of said deviation; said PI-regulator having a regulating time constant; and

(c) varying the regulating time constant of said PI-regulator as a function of a traveling speed of fiber material in said carding machine.

4,497,087

APPARATUS FOR CUTTING A FIBER SLIVER

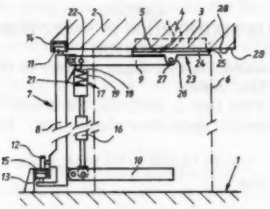
Peter Oehy, Winterthur, Switzerland, assignor to Rieter Machine Works, Winterthur, Switzerland

Filed Jun. 3, 1983, Ser. No. 500,994

Claims priority, application Switzerland, Jun. 8, 1982, 3519/82

Int. Cl.³ B65H *54/80*

U.S. Cl. 19—159 A **17 Claims**



1. In combination,

a coiler guide wheel having a fiber sliver channel for delivering a continuous length of fiber sliver into a can in a can filling station;

means for moving the can from said filling station; and

a cutting apparatus including a sliver separator, and means for moving said sliver separator below and across said fiber sliver channel while in contact with an underside of said coiler guide wheel to cut a fiber sliver extending from said channel within a length of movement from said channel corresponding to at least double the length of the longest fiber in the sliver; the movement of said sliver separator being synchronized with the movement of the can from said filling station.

4,497,088

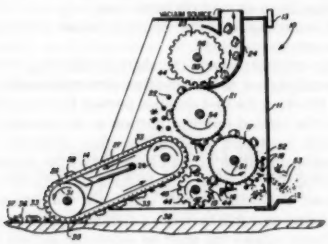
GROUND COTTON RETRIEVER WITH DUAL CLEANING MEANS

Lawrence A. Lehman, Buckeye, Ariz., assignor to Ultra Harvesters, Inc., Phoenix, Ariz.

Filed Dec. 27, 1983, Ser. No. 566,046

Int. Cl.³ D01B *3/00, 1/08*

U.S. Cl. 19—202 **8 Claims**



1. An apparatus for removing dirt and debris from clumps of cotton, said apparatus comprising in combination:

a first rotatable transfer means positioned for catching clumps of cotton from a source,

a first saw-tooth drum means having saw-teeth on its outer surface mounted for rotation about a first axis,

a second saw-tooth drum means having saw-teeth on its outer surface mounted for rotation about a second axis,

said first and second axes positioned relative to each other to define a feed space between the peripheries of said first and second drum means for receiving clumps of cotton,

said first and second drum means rotating about their respective axes with the peripheral velocity of said first drum means being less than and in the same direction as the peripheral velocity of said second drum means to enable the saw-teeth of said second drum means to engage in said feed space said clumps of cotton held by the saw-teeth of said first drum means and to carry said clumps of cotton away from said feed space,

a first grid means fixedly positioned to extend in an arcuate configuration adjacent the surface of said first drum means at a point spaced therefrom,

a second grid means fixedly positioned to extend in an arcuate configuration adjacent the surface of said second drum means at a point spaced therefrom,

the saw-teeth of said first drum means upon rotation of said first drum means holding said clumps of cotton and rubbing an exposed first surface thereof over said first grid means for cleaning thereof,

the saw-teeth of said second drum means upon rotation of said second drum means grasping in said feed space the cleaned first surface of said clumps of cotton held by the saw-teeth of said first drum means, thereby exposing a second surface of said clumps of cotton and sequentially, while holding onto said clumps of cotton, rubbing the exposed second surfaces of said clumps of cotton over said second grid means for cleaning thereof,

a doffing means rotatably positioned for removing the clumps of cotton cleaned by said second grid means from the saw-teeth of said second drum means, and

means for forcing the cleaned clumps of cotton from said doffing means into a cotton removal conduit.

4,497,089

FIBER DRAFTING ARRANGEMENT

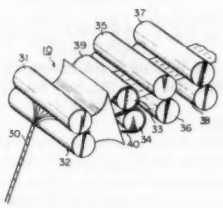
Meiji Anahara, Kariya, and Yoshihisa Suzuki, Chiryu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Sep. 9, 1982, Ser. No. 416,316

Claims priority, application Japan, Sep. 16, 1981, 56-136273[U]

Int. Cl.³ D01H *5/72, 5/86*

U.S. Cl. 19—288 **4 Claims**



1. A fiber drafting arrangement comprising:

a pair of top and bottom rollers for drawing fibers between said rollers;

a pair of top and bottom aprons disposed upstream of said rollers for guiding fibers along a path toward said rollers; and

collector means disposed between said rollers and said aprons, said collector means having top and bottom walls and side walls with a hollow funnel-like space within said walls, said funnel-like space receiving adjacent portions of

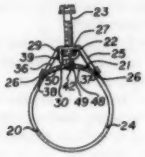
said aprons with a predetermined clearance, external wall surfaces of said collector means confronting adjacent surface portions of said rollers with a predetermined clearance, so that fibers traversing said aprons and rollers are subjected to minimal air disturbance.

4,497,090

WIRE GRIP CLAMP WITH RADIALLY-DIRECTED SCREW TAKE-UP

Robert H. Proctor, Cockeysville, Md., assignor to Murray Corporation, Cockeysville, Md.

Filed Mar. 21, 1983, Ser. No. 476,987
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—20 R **13 Claims**



1. An adjustable wire grip hose clamp, comprising:

a wire body providing a pair of circular clamping loops in axially-spaced relationship to each other, a common seat element having means at each end for receiving therethrough a first portion of each of said loops for attachment of said seat element to said loops and for maintaining said loops in said axially-spaced relationship, each of said loops having a deformed first portion thereof traversing said seat element,

said first portion being sequentially deformable by said seat element in response to constricting movement of said loop, a threaded nut proximate to and radially spaced from said seat element,

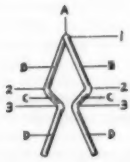
said first portion extending from said seat element to said nut, a second portion of said wire body extending from said first portion and bent into securement with said nut, and a radially-extending adjusting screw threadedly engaging and traversing said nut and seating on said seat element, whereby screw-induced elevation of said nut relatively to said seat element progressively tensions said loops simultaneously to create sequential re-formation of said deformed first portions relatively to said seat element and constriction of said loops into clamping engagement with a hose embraced thereby.

4,497,091

TWIST CLIP

Jon S. Elliott, 305 Windsor, Park Forest, Ill. 60466

Filed Mar. 18, 1983, Ser. No. 476,429
Int. Cl.³ B42F *1/02*
U.S. Cl. 24—67.9 **5 Claims**



1. A clip formed of a rod of resilient material and having:

a top having opposed ends;

two legs, one at each end, depending from said top; each said leg having (a) an upper section joined to said top at a respective one of said ends, (b) a cross member connected to said upper section oppositely of said top and extending from said upper section at a first angle thereto; and (c) a foot joined to said cross member oppositely of said upper section and extending from said cross member at a second angle thereto;

said upper sections extending away from each other in a direction transverse to said top and towards each other in the direction of elongation of said top,

said cross members extending from their respective upper section towards each other; and

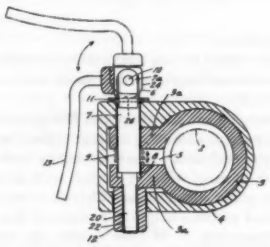
said feet being spaced and generally diverging away from each other; and being adapted to grasp an object disposed between said feet when said top is rotated approximately 180° relative to the object.

4,497,092

DEVICE FOR FIXING RODS IN SELECTED RELATIVE POSITION

Yoshihiro Hoshino, Hagoya, Japan, assignor to Hoshino Gakki Company, Ltd., Japan

Filed Dec. 2, 1982, Ser. No. 446,067
Claims priority, application Japan, Jul. 12, 1982, 57-105269[U]
Int. Cl.³ F16B *7/10*; F16L *37/00*
U.S. Cl. 24—514 **3 Claims**



1. Clamping means for securing coaxial, axially telescoping rods together, the clamping means comprising:

a first part for attachment to the end of one of the rods adjacent the other rod;

an annular bushing supported to the first part and extending around the other rod; the bushing being open along one circumferential side for defining an axial gap through the bushing; the bushing including first and second terminal portions on opposite sides of the gap in the bushing, such that drawing the terminal portions together reduces the gap and tightens the bushing around the other rod, and permitting the terminal portions to move apart loosens the bushing from around the other rod;

a shaft extending from the second terminal portion past the first terminal portion;

a clamp connected with the shaft for drawing the second terminal portion toward the first terminal portion; the first part blocking the first terminal portion from moving away from the second terminal portion as the second terminal portion is drawn toward the first terminal portion, whereby operation of the clamp draws the terminal portions together to clamp the bushing on the other rod;

said clamp comprising a cam connected with the shaft; the cam being movable between a clamping position at which the clamp draws the shaft to move the second terminal portion toward the first terminal portion and a releasing position at which the cam permits the shaft to shift to move the second terminal portion away from the first terminal portion to release the bushing from securing the other rod;

said first part comprising a case extending around the bush-

ing; the shaft extending from the second terminal portion past the first terminal portion and out of the case past the first terminal portion; the cam being located outside the case beyond the first terminal portion; the cam engaging the case beyond the first terminal portion upon movement of the cam between the clamping and released positions thereof; the cam being shaped for moving the shaft for moving the second terminal portion with respect to the first terminal portion as the cam moves between the clamped and released positions;

the case being shaped for being engaged by the first terminal portion as the shaft draws the second terminal portion toward the first terminal portion; and

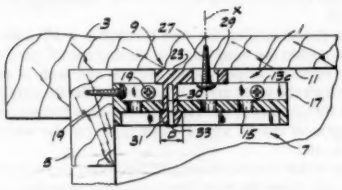
said cam being journaled to the shaft at a pivot axis across the shaft; the cam including a first cam surface which is at a relatively greater distance from the pivot axis and a second cam surface which is at a relatively lesser distance from the pivot axis; wherein with the first cam surface engaging the case, the shaft being drawn to move the second terminal portion toward the first terminal portion, and with the second cam surface engaging the case, the shaft being permitted to shift to permit the first and second terminal portions to separate.

4,497,093

TWO-PART FASTENER

Jerome R. Haberkorn, 316 Arnold Ave., East Peoria, Ill. 61611

Filed Dec. 27, 1982, Ser. No. 453,630
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—586 **20 Claims**



1. A two-part fastener for fastening two objects together comprising a first fastener part in the form of a bracket having a plurality of relatively closely spaced openings therein adapted to be mounted on one of the objects, and a second fastener part adapted to be mounted on the other of the objects, said second fastener part having a contractible and expansible locking member thereon adapted to contract for insertion of the member through an opening in the bracket and to expand after insertion through said opening for fastening the two fastener parts together, said locking member being independently movable with respect to said other object when the second fastener part is mounted thereon for enabling the locking member to move without substantial movement of said other object to a position in which the locking member is aligned with an opening in the bracket for insertion therethrough thereby to fasten said two objects together.

4,497,094

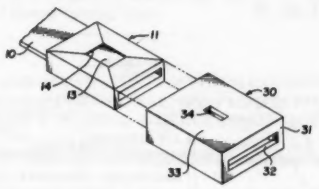
CHILD PROOF SEAT BELT

Roy E. Morris, Route 2, Box 149, Cedar Creek, Tex. 78612

Filed Nov. 26, 1982, Ser. No. 444,674
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—633 **20 Claims**

1. For use with a seat belt which includes a latch housing and a coacting latch tongue fixed to respective seat belt segments; said latch tongue being insertable in said latch housing to fasten said seat belt, and said latch housing having an end opening to pass said latch tongue; said latch housing having a release button exposed to one face thereof, dimensioned to be depressed by a thumb or finger to release said latch tongue from said latch housing;

a safety cover for enclosing said release button in said one housing face; said cover having a release aperture dis-



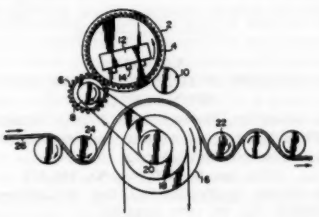
posed to overlie only a small portion of said release button; said release aperture enabling depression of said release button only by an instrument dimensioned to pass through said release aperture.

4,497,095

APPARATUS FOR PREPARING A SUEDE-LIKE RAISED WOVEN OR KNITTED FABRIC

Norihiro Minemura; Takeo Kimura, and Yoshiaki Mitsui, all of Osaka, Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP79/00074, § 371 Date Dec. 13, 1979, § 102(e) Date Nov. 29, 1979, PCT Pub. No. WO79/00926, PCT Pub. Date Nov. 15, 1979
PCT Filed Mar. 26, 1979, Ser. No. 179,396
Claims priority, application Japan, Apr. 13, 1978, 53-42643; Apr. 13, 1978, 53-42844
Int. Cl.³ D06C *23/00*
U.S. Cl. 26—2 R **1 Claim**



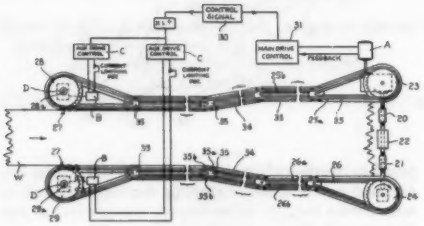
1. An apparatus for preparing a suede-like raised fabric comprising a rotatable cylindrical fabric supporter having an imperforate surface with a pattern of random contour variations thereon for supporting a travelling length of said fabric on a portion of the surface thereof, a hollow rotatable cylinder disposed in parallel spaced relation to said fabric supporter and having a liquid passable perforate surface comprised of a 5–300 mesh wire gauze whose meshes are partially and randomly closed so as to provide an open surface area constituting 10–80% of the total surface area, jet nozzles disposed inside said hollow rotatable cylinder with the nozzles directed toward said fabric supporter for randomly directing jets of liquid through said wire gauze onto the fabric and means for rotating said fabric supporter and said cylinder simultaneously to provide a random surface effect on said fabric.

4,497,096

TENTER FRAME DRIVE AND METHOD

Hans H. Richter, Warwick, R.I., assignor to Marshall and Williams Company, Greenville, S.C.

Filed Nov. 9, 1981, Ser. No. 319,703
Int. Cl.³ D06C 3/04
U.S. Cl. 26—74 2 Claims



2. The method of driving a pair of vertical tenter clip carrying chains for supporting a web in open width between chains with adjacent horizontal pull side runs and remote return side runs, a sprocket at each end of each chain and rails supporting said clips extending inwardly in opposed relation, comprising the steps of:

driving both chains through a mechanical drive connection at a delivery end between adjacent sprockets such that opposed tenter clips carried by respective chains are maintained in registry during a web carrying process;

separately driving each sprocket at an entrance end of said chains through separate drive means;

generating a signal responsive to conditions prevalent at the delivery end of the tenter frame and indicative of a desired torque in said chains;

controlling both of said separate drive means in response to said signal to deliver a torque to the respective chains at the entrance end to exert tension sufficient to substantially remove slack in said return side runs while permitting sufficient tension in the pull side runs of said chains; and

controlling said separate drive means causing sufficient and substantially equal torque to be delivered by each of said separate drive means to each of the respective chains to positively position respective chains avoiding chattering.

4,497,097

PREPARATION OF IMPROVED THERMOPLASTIC SPUN FLEECES

Heinrich Schneider, Dornach, and Johann Hammerschmidt, Linz-Plesching, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Jan. 8, 1980, Ser. No. 110,320
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900888; Jun. 19, 1979, 2924652
Int. Cl.³ D04H 3/10
U.S. Cl. 28—112 4 Claims

FILAMENT PRODUCTION MELT SPINNING
STRETCHING OF FILAMENTS
FILAMENT COLLECTION TO MAKE A SHEET
NEEDLING STEP
STRETCHING OF THE SHEET IN THE DIRECTION OF LOWER TENSILE STRENGTH WHILE HEATING

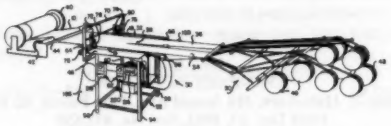
1. A process for improving the tensile characteristics of a spun fleece made from virtually continuous filaments of thermoplastics in approximately random arrangement, which fleece initially has a higher tensile strength in one direction than in the direction at right angles thereto, and which has been consolidated by needle-punching, which comprises stretching by 20 to 200% of the original length, in the direction of the lower tensile strength, at a temperature which is 85° to 25° C. below the crystalline melting point, while maintaining the length in the direction at right angles to the stretching direction by an amount within the range of ±10% of the original length.

4,497,098

FILL YARN REMOVAL APPARATUS

Khin M. Lay, Gardena, and Stephen E. Palguta, Redondo Beach, both of Calif., assignors to HITCO, Newport Beach, Calif.

Filed Sep. 7, 1982, Ser. No. 415,526
Int. Cl.³ D02G 3/00
U.S. Cl. 28—171 19 Claims



1. Apparatus for removing fill yarn from a web, the fill yarn extending across the width of the web between opposite edges of the web along the length of the web, comprising the combination of:

means for advancing the web through a work area;

means within the work area for cutting the fill yarn adjacent the opposite edges of the web as the web is advanced through the work area, the cutting of the fill yarn adjacent the different opposite edges of the web forming different lengths of the fill yarn extending across the width of the web; and

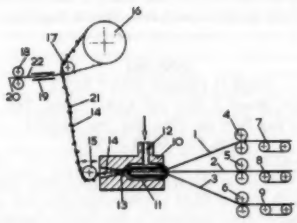
means within the work area for removing the lengths of the fill yarn from the web, the means for removing including a hook and means for providing reciprocating movement of the hook into and out of the work area.

4,497,099

METHOD FOR PRODUCTION OF SYNTHETIC YARN AND YARN-LIKE STRUCTURES

Alexander Scott, Paisley, Scotland, assignor to J & P Coats, Limited, Glasgow, Scotland

Filed Jan. 18, 1982, Ser. No. 339,888
Claims priority, application United Kingdom, Feb. 4, 1981, 8103461
Int. Cl.³ D02G 1/16, 1/18
U.S. Cl. 28—220 6 Claims



1. A method of producing a substantially twistless intermingled composite yarn from at least two separate strands of

thermoplastic strand material comprising drawing at least one strand by an amount such that the ratio of draw and hence the shrinkage ratio are increased to relatively high values for the particular material of which the strand is made, subjecting the strands to a turbulent stream of fluid while feeding them forwardly at different rates of overfeed so that loops form on the strands, thus creating an intermingled textured yarn, and then heating the intermingled yarn, which heating step incorporates the steps of holding successive quanta of the yarn to a predetermined length while the yarn is being heated thus causing the loops to pull tight into the form of bud-like projections and the strands to collapse on one another so that the previously textured form of the yarn is eliminated and the bud-like projections on the different strands entangle with one another and restrict relative movement of the strands, then continuing to hold the now untextured yarn against shrinkage and at the same time cooling it to a temperature below that at which the yarn ceases all attempt to shrink further and the yarn remains completely stable as an untextured yarn.

4,497,100

APPARATUS FOR WORKING PIPES

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

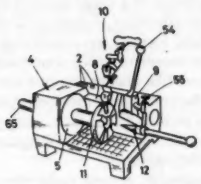
Continuation of Ser. No. 125,696, Feb. 28, 1980, Pat. No. 4,353,154. This application Jun. 30, 1982, Ser. No. 393,777

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837737

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.³ B27C *9/02*; B23P *23/00*

U.S. Cl. 29—27A **4 Claims**



1. An apparatus with electromotor drive, comprising in combination a drive machine as a basic machine having a housing including at least one bearing opening therein as well as a clamping device installed in the housing and a motor including a turning-mechanism that drives workpieces and working devices rigidly connected therewith selectively for carrying out machining operations including cutting as well as chip removal, including means for performing the machining operations, as least one guide rod detachably and fixedly journalled in the bearing opening of the housing for said drive machine for receiving a tool-carrier provided with at least one continuous bore with which said tool-carrier is mounted to be displaceably journalled on said at least one guide rod, said at least one guide rod being interchangeable relative thereto, and a chip tray provided in a region below said at least one guide rod, said chip tray structurally being integrally connected in one piece and unitary with said housing, said tool-carrier also being capable of being fixed upon said guide rod when installed as well as disassembled simply as a unit easily releasable with respect to the drive machine through remaining shiftable upon said guide rod, a swivel head and clamping device for driving workpieces and devices for rotational machining operations, means providing a thread-cutting head and means to make it connectible with said swivel head, manual circular saw machine on a guide rod, said thread-cutting head being rotatably journalled and being provided with a tube-shaped flange gripped by said connectible means including clamping jaws, said saw machine being pivotally arranged on said at least one guide rod, being provided with a bearing eye for receiving said guide rod, and being arranged before said thread-cutting head, a cutting-off head and means to make it connectible with said swivel head of said drive machine, said cutting-off head being provided with means including a tube-shaped flange, and a vise secured on a guide rod arranged before said cutting-off head, the latter being arranged on that side of said drive machine opposite said thread-cutting head.

4,497,101

METHOD AND APPARATUS FOR THE MANUFACTURE OF A THREE-DIMENSIONAL, SHAPED GRAPHITE ELECTRODE UTILIZING A THREE-DIMENSIONAL, SHAPED FILE

Rolf Schrader, Braunschweig, Fed. Rep. of Germany, assignor to Grafon AG, Oreseline, Switzerland

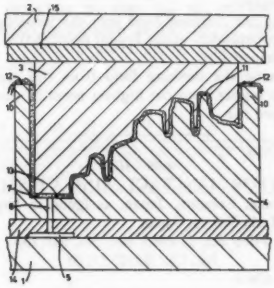
PCT No. PCT/CH82/00081, § 371 Date Jan. 17, 1983, § 102(e) Date Jan. 17, 1983, PCT Pub. No. WO83/00111, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 21, 1982, Ser. No. 459,538

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125316

Int. Cl.³ B23D *67/00, 71/00*

U.S. Cl. 29—76 R **12 Claims**



1. Apparatus for the manufacture of a three-dimensional, shaped graphite electrode from a graphite electrode block or blank (3) having

a three-dimensional shaped file formed with an abrasive surface, in which the file (4) and the three-dimensional block or blank (3) are moved translationally toward one another and carry out a filing stroke, while executing planetary relative orbital movement in a plane between the shaped file and the three-dimensional electrode block or blank until the contour of the electrode block or blank is three-dimensional, shaped to correspond, with tolerance, to a negative copy of the contour of the shaped file;

a support plate (1), the three-dimensional, shaped file being secured to the support plate;

wherein the shaped file and the three-dimensional, shaped electrode additionally, periodically, execute a reciprocating movement toward and away from one another,

the space between the file and the electrode during said reciprocating movement defining a working gap;

a flushing fluid is provided, for flushing out electrode material filed away by the shaped file from the working gap between the shaped file and the three-dimensional, shaped electrode block or blank (3);

and wherein at least one flushing conduit is formed in the shaped file, terminating in the working gap, to permit introduction of the flushing fluid thereinto,

wherein, in accordance with the invention,

the shaped electrode blank is disposed above the shaped file (4);

and the shaped file, below or beneath the electrode block or blank, includes an outer wall (10) extending upwardly,

with respect to the support plate, and surrounding the electrode block in pan-like fashion, the upper rim (12) of the wall (10) of the shaped file being at a higher level than the highest point (11) of the contour of the shaped file (4) with respect to the support plate.

8. A method for the manufacture of a three-dimensional, shaped graphite electrode from a graphite electrode blank or block (3) comprising

moving a three-dimensional, shaped file with an abrasive surface translationally toward the block to carry out a filing stroke, while executing a planetary relative orbital movement in a plane, between the shaped file and the electrode block or blank until the contour of the electrode block or blank is three-dimensionally shaped to correspond, with tolerance, to a negative copy of the contour of the shaped file;

additionally periodically moving the shaped file and the three-dimensional, shaped block toward and away from one another, the space between the file and the electrode block, during said reciprocating movement, defining a working gap;

introducing a flushing fluid for flushing out material filed away by the shaped file from the working gap between the shaped file and the three-dimensional shaped electrode block,

wherein said step of introducing the flushing fluid into the gap comprises

introducing the flushing fluid into the working gap (7) at least approximately at the lowest point (13) of the contour of the shaped file;

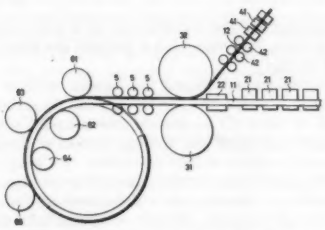
and removing the flushing fluid from the gap at a level which is higher than the highest point of the contour of the shaped file.

4,497,102

PROCESS FOR MANUFACTURING A PISTON RING

Hiroshi Ikutake, Saitama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,135
Int. Cl.³ B23P *15/08*
U.S. Cl. 29—156.6 **4 Claims**



1. In a process for manufacturing a piston ring for an internal combustion engine having an outer peripheral surface to which a different material is joined to define a sliding surface, said process including preparing a base piston ring material in the form of a wire rod and a thinner second wire rod used to form said outer peripheral surface, the improvement which comprises:

the first step of feeding by ralls both said base material and said second wire rod with said second wire rod being fed separately from said base material;

the second step of supplying said base material and said second wire rod to a pair of rotary disk electrodes to bring said base material and said second wire rod into intimate contact with each other between said electrodes;

the third step of supplying an electric current to said electrodes to weld said base material and said second wire rod together;

the fourth step of curling said welded base material and said second wire rod to form a piston ring with said second wire rod positioned on the outer peripheral surface of said piston ring;

the fifth step of cutting away said piston ring from said welded base material and said second wire rod; and

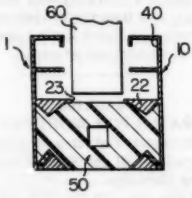
the sixth step of heat treating said piston ring.

4,497,103

METHOD FOR MANUFACTURING A HEAT INSULATION SASH BAR

Shuuichi Hosooka; Tetsuji Imai, and Haruo Hori, all of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,783
Claims priority, application Japan, May 22, 1981, 56-76721
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—418 **3 Claims**



1. A method for manufacturing a heat insulating sash bar comprising two oppositely positioned face members of the sash bar, one facing inside of a room and the other facing outside of the room, connecting with a connecting member made of a heat insulating material which comprises the steps of:

inserting the connecting member made of a substantially rigid dimensionally strong heat insulating material into the groove-like channel of a metal-made integral bar material having an approximately H-wise or U-shaped cross section as a whole formed by connecting two oppositely positioned face members with a connecting part to form at least one groove-like channel on one side thereof;

securely fixing the connecting member made of a heat insulating material to both of the face members by deforming projections on the face members into mating depressions in the connecting member;

removing longitudinally at least partly the connecting part of the bar material having an approximately H-wise or U-shaped cross section over whole length thereof whereby to thermally isolate the face members from each other by not being connected with the metal-made connecting part;

forming a longitudinally extending hollow space and a groove-like channel within the bar material; and filling the thus formed groove-like channel with a heat insulating material.

4,497,104

SEPARATION DEVICE MANUFACTURE

Tom A. Fowles, McHenry, Ill.; Robert Lee, Plymouth, Minn.; Frank M. Richmond, Harvard, Ill., and Henry Tobiasz, Arlington Hts., Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

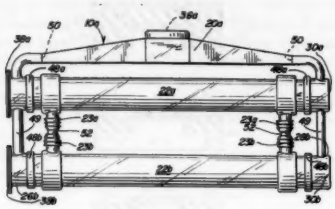
Filed Dec. 20, 1982, Ser. No. 451,113
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—419 R **11 Claims**

1. In a method for making a hollow fiber separation device, the improvement comprising:

forming an integral structure which comprises at least one tubular housing portion having a closed end and a pair of closed-end, laterally extending ports, and an elongated chamber portion extending in longitudinal relation to the tubular housing portion and communicating with the housing portion adjacent to opposed ends thereof;

providing an aperture in the central area of said elongated chamber;

inserting hollow fibers for diffusion into said housing portion through the housing end opposed to the closed end;
closing the opposed end of said housing portion;
spinning said structure about an axis between said ends;
adding potting compound to said chamber portion through



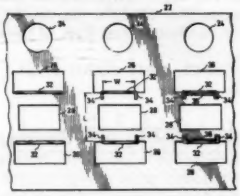
the aperture, whereby the potting compound migrates radially outwardly through the chamber to the closed ends of the housing portion to encase the ends of the hollow fibers in potting compound; and
curing the potting compound.

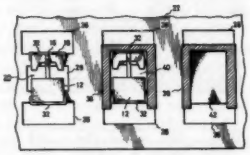
4,497,105

METHOD OF MANUFACTURING SOLID ELECTROLYTE CHIP CAPACITORS

Toshihiko Uemura, Kyoto, Japan, assignor to Matsuo Electric Company, Ltd., Toyonaka, Japan

Filed Aug. 18, 1983, Ser. No. 524,320
Claims priority, application Japan, Aug. 20, 1982, 57-145126
Int. Cl.³ H01L *21/64;* **H01G** *4/00, 9/08*
U.S. Cl. 29—570 **3 Claims**





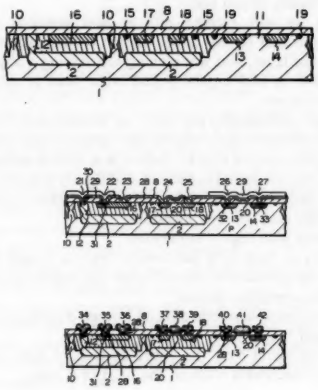
1. A method of manufacturing solid electrolyte chip capacitors comprising steps of preparing capacitor elements each having a substantially rectangular cross-section and including a cathode layer formed on the outer surface thereof, punching and press-shaping a single conductive metal strip to form successive pairs of terminal members each having a vertical portion standing erect from the plane of said strip, forming openings in said strip between said pairs of terminal members each having a width less than the distance between said terminal members and a length greater than the length of said terminal members so that each terminal member has an L-shaped cross section, the distance between the vertical portions of each pair of terminal members being substantially equal to the overall length of the capacitor elements inclusive of the anode conductor, folding end portions of each vertical portion inwardly at a right angle to form side wings with the distance therebetween being substantially equal to the width of the capacitor element placing one of said capacitor elements between each pair of said terminal members and electrically connecting each pair of said terminal members to said cathode layer and said anode conductor, respectively, of the capacitor disposed therebetween, encapsulating said capacitor elements with synthetic resin and then separating each of encapsulated capacitor elements from the remainder of said strip.

4,497,106

SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

Yoshinobu Momma, Sagamihara; Tsuneo Funatsu, Kawasaki, and Atusi Sasaki, Aizuwakamatsu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 28, 1981, Ser. No. 315,903
Claims priority, application Japan, Oct. 29, 1980, 55-151557
Int. Cl.³ H01L *29/78, 21/225*
U.S. Cl. 29—571 **4 Claims**



1. A method of manufacturing a semiconductor device having at least one bipolar transistor and at least one MIS FET integrated in a single semiconductor substrate, comprising the steps of:
(a) forming a base region of the bipolar transistor and source and drain regions of the MIS FET in the semiconductor substrate, the base region having a first conductivity type, the source and drain regions having a second conductivity type which is the opposite of the first conductivity type;
(b) forming a gate insulating film of the MIS FET on the semiconductor substrate;
(c) forming a window for forming an emitter region of the bipolar transistor;
(d) forming a polycrystal semiconductor layer covering at least the emitter window of the bipolar transistor and the gate insulating film; and
(e) introducing an impurity through the emitter window into the semiconductor substrate to form the emitter region of the bipolar transistor in the semiconductor substrate.

4,497,107

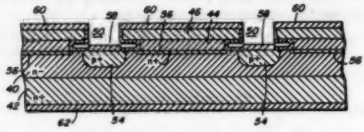
METHOD OF MAKING SELF-ALIGNED HIGH-FREQUENCY STATIC INDUCTION TRANSISTOR

Adrian I. Cogan, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 320,240, Nov. 12, 1981, Pat. No. 4,468,682. This application Sep. 12, 1983, Ser. No. 531,524

Int. Cl.³ H01L *21/82, 21/225, 21/20*

U.S. Cl. 29—571 **3 Claims**



1. A method for forming a gate-source structure for a static induction transistor, said method comprising the steps of:

growing a high resistivity expitaxial layer on a surface of a semiconductor substrate;

depositing a highly doped layer of polycrystalline silicon on said expitaxial layer;

depositing a lightly doped layer of polycrystalline silicon on said highly doped layer;

forming a mask on said lightly doped layer with openings in said mask at predetermined gate window locations;

etching by anistropic plasma at said window locations through said lightly doped layer and partially through said highly doped layer;

etching by wet etching mix at said window locations through said highly doped region to the surface of said epitaxial layer, said wet etching mix having a higher etching rate in said highly doped layer than in said lightly doped layer;

growing a silicon dioxide layer on the exposed surfaces of said epitaxial, highly doped and lightly doped layers;

etching by reactive ions to remove said silicon dioxide layer from the horizontal surface of said lightly doped layer and from the unmasked surface of said epitaxial layer as defined by said window locations;

implanting gate region impurities;

annealing to form gate and source regions in said epitaxial layer by diffusion of dopant from said highly doped layer of polycrystalline silicon;

etching to remove silicon dioxide formed during said annealing; and

depositing metal over the entire surface to form gate and source electrodes without the need of a mask.

4,497,108

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE BY CONTROLLING THICKNESS OF INSULATING FILM AT PERIPHERAL PORTION OF ELEMENT FORMATION REGION

Kei Kurosawa, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1983, Ser. No. 495,483

Claims priority, application Japan, May 21, 1982, 57-85726

Int. Cl.³ H01L *21/76*

U.S. Cl. 29—576 W **4 Claims**

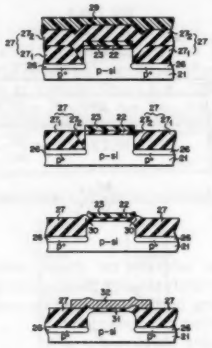
1. A method for manufacturing a semiconductor device wherein a thickness of an insulating film at a pheripheral portion of an element formation region is controlled, which comprises the steps of:

forming an antietching mask on a semiconductor substrate through an antioxidant film, said antietching mask being formed except at a prospective field region;

selectively etching a prospective field region to form a groove;

depositing a field insulating film in said groove so as to have a flat surface; and then

exposing said semiconductor substrate in an oxygen atmosphere while said antioxidant film is left thereon, thereby



locally oxidizing a surface portion of said semiconductor substrate surrounding said element formation region; and forming a desired element in said element formation region isolated by said field insulating film.

4,497,109

METHOD OF FABRICATING LIGHT-CONTROLLED THYRIST` `R UTILIZING SELECTIVE ETCHING AND ION-IMPLANTATION

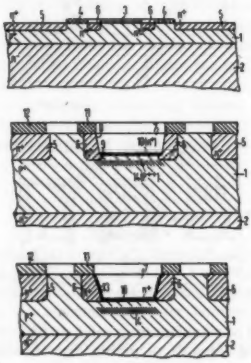
Peter Hub er; Jens P. Stengl, and Jenö Tihanyi, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 212,505, Dec. 3, 1980, abandoned. This application Mar. 12, 1984, Ser. No. 587,839

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951916

Int. Cl.³ H01L *21/302, 21/38*

U.S. Cl. 29—578 **5 Claims**



1. Process for construction of a light-controllable thyristor having a semiconductor body of a first conductivity type, said body having an upper surface, said process comprising the steps:

diffusing a first zone of a second conductivity type into said upper surface of said semiconductor body; masking of said first zone, said masking having unmasked areas;

diffusing a second and a third zone of said first conductivity type into said unmasked areas; creating a depression in

said upper surface of said semiconductor body in said first zone, said depression shaped such that a step is created in the bottom of said depression by material left from said second zone; creating by ion implantation a further heavily doped layer of said second conductivity type near the bottom of said depression;

creating by means of ion implantation at the bottom of said depression in said first zone and on said step of said second zone, a layer of said first conductivity type, said layer electrically conductively connected with said first subzone of said second zone, said ion implantation creating diffusion of a doping concentration that is at least as concentrated as the doping concentration of said second zone; and

attaching an electrode to each of said second and said third zones.

4,497,110

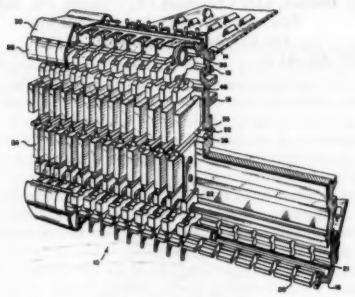
METHOD OF MAKING A HAMMER BANK ASSEMBLY

Val K. Jezbera, Thousand Oaks, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Division of Ser. No. 299,043, Sep. 3, 1981, Pat. No. 4,373,440, which is a division of Ser. No. 65,766, Aug. 13, 1979, Pat. No. 4,395,945. This application May 20, 1983, Ser. No. 496,420

Int. Cl.³ H01F *7/06;* **H01S** *4/00*

U.S. Cl. 29—602 R **1 Claim**



1. A method of manufacturing a hammer bank assembly, said assembly using hammers having a flat coil structure supported by a pair of crossed spring wires which extend through a generally rectangular foot member, comprising the steps of:

providing an elongated frame assembly having a rear vertical portion and a forwardly extending horizontal portion;

positioning the foot members of said hammers in said frame assembly above said horizontal portion;

securing said foot members to said frame assembly by placing a plurality of clips over the front of said horizontal portion and the front of the foot members, said clips being connected to a common strip member so as to facilitate one step installation of said clips; and

removing the common strip, thereby resulting in a plurality of individually removable clips.

4,497,111

COIL INSERTING APPARATUS

Tokuhito Hamane; Masaaki Tasai, both of Hirakata, and Tadashi Kubota, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 12, 1982, Ser. No. 441,361

Claims priority, application Japan, Nov. 20, 1981, 56-187533

Int. Cl.³ H02K *15/06*

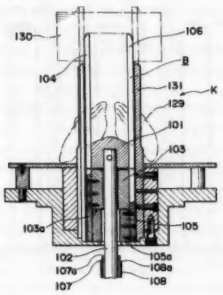
U.S. Cl. 29—734 **2 Claims**

1. A coil inserting apparatus for inserting coils into slots of a stator core of a rotary electric machine, comprising:

a plurality of blade members arranged in an annular configuration and spaced at predetermined intervals for guiding a coil into the slots in the core of the rotary electric machine, the blade members being divided into a plurality of groups of blade members;

a coil pusher within said annular configuration and vertically reciprocable in the axial direction of said blade members for inserting the coil into the slots under pressure by utilizing said blade members as guides;

separate blade holders, one for each group of blade members, and to which the blade members of the respective groups are attached, said blade holders being within said annular configuration one below the other beneath said coil pusher and being movable in the axial direction of said blade members independently of each other, the successive blade holders having successively larger bores through the centers thereof in the downward direction;



a pusher driving shaft extending through said bores to and on which said coil pusher is mounted;

a plurality of concentric hollow driving shafts, one for each blade holder, around said pusher driving shaft, the diameters of the shafts having a size to permit the respective hollow driving shafts to pass through the bores in the blade holders below the corresponding blade holder, whereby when a particular hollow shaft is raised, it will raise only the corresponding blade holder and the blade holders above it and the coil pusher;

rotary driving means for each of said shafts operable independently of each other; and

motion converting means for each shaft and connected between the respective shafts and the corresponding rotary driving mechanisms for converting the rotary motion of the driving means to linear motion for linearly moving the respective shafts.

4,497,112

METHOD FOR MAKING DOUBLE L-SHAPED ELECTRODE

Hiep D. Dang, Lake Jackson; Richard N. Beaver, Angleton; Frank W. Spillers, and Mark J. Hazelrigg, Jr., both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 395,404, Jul. 6, 1982, Pat. No. 4,448,663. This application Dec. 12, 1983, Ser. No. 560,293

Int. Cl.³ H01R *43/00*

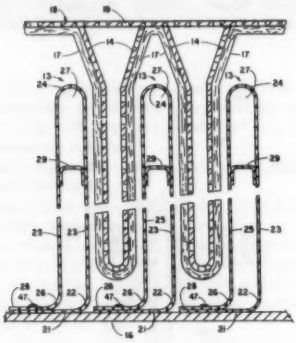
U.S. Cl. 29—825 **3 Claims**

1. A method for making an anode element capable of being used in a brine electrolysis cell wherein substantially vertically oriented, spaced anode elements are mechanically attached to a substantially vertically oriented anode backplate and interleaved among correspondingly spaced cathode elements, which cathode elements are also substantially vertically oriented, said method comprising;

(a) bending a single sheet of a planar surface foraminous metal in a fashion such that it has the shape of an elongated

"U" or "V" as viewed from the edge of the sheet, said bend being located sufficiently close to the center of the sheet so as to be able to form a flange and a working face in each of the two planar surfaces which extend away from the bend and which form the legs of the "U" or "V" of the bend;

(b) simultaneously bending each of the two planar surfaces which form the legs of the elongated "U" or "V"-shaped bend formed in Step (a) above into a working face section and a flange section, each working face section and flange section being a substantially planar surface which is substantially vertically oriented, each working face section being located between the "U" or "V"-shaped bend and



the flange section of its respective leg, each flange section pointing in the same direction and being parallel to the other flange section, the two working face sections being spaced from each other to define an anolyte circulation chamber thereinbetween them,

the bending of said two planar surfaces being such that the two flange sections formed partially overlap one another in a surface-to-surface contact without having to distort the planar surface of the working face sections to make such contact, and being bent so that the flange sections are of sufficient length to allow the anode element to be mechanically connected to an anode backplate at a site external to its working faces and anolyte circulation chamber.

4,497,113

ASPARAGUS CUTTER

Spencer K. Haws, P.O. Box 315, Mesa, Wash. 99343

Filed Aug. 17, 1983, Ser. No. 524,184

Int. Cl.³ B26B *27/00;* **B26D** *5/10*

U.S. Cl. 30—124 **7 Claims**

1. An apparatus for harvesting a ground crop having a stalk, such as asparagus spears, said apparatus comprising:

means for cutting said stalk at ground level, said cutting means consisting of a sharpened leading edge formed of a substantially flat metal plate; and

means for holding said stalk in a queue, said stalk holding means consisting of metal plate materials defining a slot adjacent said cutting means for holding said stalk queue, said slot defining means having a stalk entry end forward of said sharpened leading edge, a stalk exit end rearward of said cutting means and a path between said entry end and said exit end of approximately the width of a stalk, said entry end being substantially wider than a stalk width for capturing said stalk in said queue prior to cutting of said stalk, said exit end being open to permit rearward withdrawal of a collection of each said stalk through said queue, said slot defining means being fixedly positioned relative to said cutting means to receive and hold each

said stalk in said queue upon cutting of said stalk by said cutting means.

4,497,114

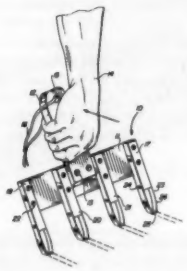
APPARATUS FOR APPLYING DESIGNS TO WALL STRUCTURE

Joe D. Belcher, 6232 Christiana Ct., Orlando, Fla. 32810

Filed Apr. 20, 1983, Ser. No. 486,918

Int. Cl.³ B43L *13/02;* **E04G** *21/20*

U.S. Cl. 33—41 D **6 Claims**



1. An apparatus for applying brick designs to a wall surface comprising in combination:

a handle;

a frame having the handle attached thereto;

a plurality of blade holders removably attached to the frame by threaded fasteners; and

a plurality of U-shaped blades having arcuate sides and flat bottoms, each blade being removably attached to one blade holder by a threaded fastener, whereby brick designs can be applied to stucco, cement, plaster or mortar walls, or the like.

4,497,115

WELDER'S MISMATCH GAUGE

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581

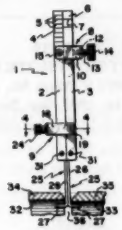
Filed Mar. 9, 1983, Ser. No. 473,687

Int. Cl.³ G01B *3/20*

U.S. Cl. 33—174 R **12 Claims**

1. A gauge for use with two sections to be welded together and having confronting ends spaced by a gap, said gauge comprising a pair of elongate, side-by-side members confronting one another; means coupling said members to one another for relative axial movement; locking means for releasably locking said members in a selected one of a number of axially adjusted

positions; restraining means acting on said members and restraining relative axial movement thereof independently of said locking means; a gauge leg for each of said members; and means separably securing said legs to the respective members, each of said legs having a thickness less than that of its associated member and being flush with that side of its associated member which confronts the other of said members, said legs extending adjacent and parallel to one another from corresponding ends of the respective members and terminating in outwardly turned feet projecting in opposite directions, said legs and feet being of such thickness as to pass through said gap when said feet are positioned parallel to said gap and the combined length of said feet being greater than the width of said gap to enable said feet to span and project beyond both sides of said gap when said feet are positioned transverse to said gap.



7. A gauge for use with two sections to be welded together and having confronting ends spaced by a gap, said gauge comprising a pair of elongate members; means coupling said members side-by-side for relative axial movement thereof; a pair of elongate gauge feelers; and means removably securing said feelers to respective ones of said members in prolongation thereof and parallel to one another, said securing means comprising a transverse socket in the respective members between the ends thereof and in which the associated feeler is removably accommodated, each of said feelers terminating at its end remote from its associated member in a laterally turned foot, the foot of one of said members extending in a direction away from the foot of the other of said members, the combined lengths of the respective feet being greater than the width of said gap.

4,497,116

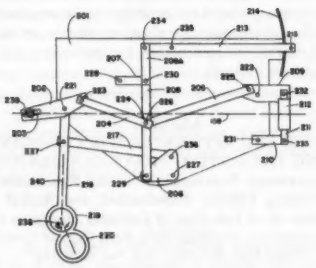
COMPOUND LEVER BOW SIGHT

Brian Hawkins, 59 N. Paquatuch Ave., E. Moriches, N.Y. 11940

Filed Apr. 11, 1983, Ser. No. 483,816

Int. Cl.³ F41G *1/00*

U.S. Cl. 33—265 **11 Claims**



1. A sight for archery bow of the type used to propel an arrow and which is actuated by an operator who is positioned rearward of the bow, the bow having a central region about which the arrow passes and which includes a grip used by the operator as a means for holding the bow, the bow being considered for reference purposes as positioned generally vertically and an arrow on the bow being positioned generally horizontally, the bow and arrow in these positions defining a vertical reference plane, while the direction of the arrow as indicated by the location of the arrow tip with respect to the bow when the arow is placed in its conventional position across the bow in preparation for propelling the arrow from the bow defining a forward direction, with the opposite direction from the forward direction being defined as the rearward direction, said sight comprising:

(a) a frame positioned generally in the vertical reference plane and secured to the bow about the bow's central region,

(b) a forward sighting element movably mounted to the frame, the forward sighting element being positioned generally orthogonal to the vertical reference plane, and its movement is generally in a vertical plane orthogonal to the vertical reference plane,

(c) a rear sighting element movably mounted to the frame, the rear sighting element being positioned generally orthogonal to the vertical reference plane and its movement is in a plane generally orthogonal to the vertical reference plane, the rear sighting element being positioned closer to the operator's eye than the forward sighting element, and

(d) means for simultaneously positioning the forward and rear sighting elements along any one of a plurality of sighting lines generally in the vertical reference plane, each sighting line originating at the operator's sighting eye and making a different angle with the horizontal to enable the operator to maintain his sighting eye at one position while aiming the bow at a target located at any one of a plurality of ranges, each range corresponding to one of said sighting lines,

and said sight further comprising a range indicating means linked to said forward and rear sighting elements to indicate a range corresponding to a particular sighting line to which the forward and rear sighting elements are aligned,

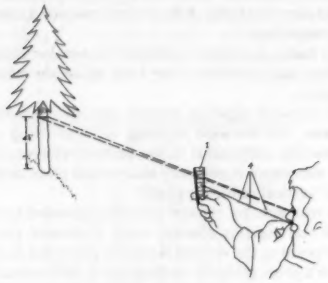
said sight still further comprising a range adjustment means linked to said sighting elements to provide a means by which the operator may move said range adjustment means and align the forward and rear sighting elements along any selected one of said sight lines, and wherein said means for positioning said forward and rear sighting elements comprises: a drive linkage, a forward sighting element crank comprising a first lever arm, a rear sighting element crank comprising a second lever arm, and a first and second pivot, the lever arms having two ends and being positioned in and constrained to more generally in the vertical plane, the first lever arm being connected at one end to the forward sighting element and at the other end to the drive linkage, the first pivot rotatably connecting the first lever to the frame at a point between its ends, the second lever arm being connected at one end to the rear sighting element and at the other to the drive linkage, and the second pivot rotatably connecting the second lever arm to the frame at a point between its ends, the distance from the forward sighting element to the first pivot divided by the distance from the first pivot to the connection of the drive linkage to the first lever arm being greater than the distance from the rear sighting element to the second pivot divided by the distance from the second pivot to the connection of the drive linkage to the second lever arm to provide for movement of the forward sighting element which is greater than that of the rear sighting element for the same movement of the drive linkage, enabling the forward and rear sighting elements to be aligned along any one of said plurality of lines.

4,497,117

SLOPE COMPENSATING ANGLE GAUGE

A. Ray Wrobley, and James H. Sullivan, both of P.O. Box 1471, Sedona, Ariz. 86336

Filed Sep. 12, 1983, Ser. No. 531,076
Int. Cl.³ G01C 3/00
U.S. Cl. 33—276 4 Claims



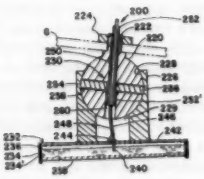
1. A slope-compensating basal area angle gauge for forest inventory procedure comprising a (slope-conpensated) sighting scale piece which comprises an elongated, longitudinally tapered strip of material with calibrations thereon which, together with the degree of taper of the scale piece, constitute trigonometric functions of the slope percentage of the terrain over which the observation is being made, said scale piece having attached thereto a flexible cord or thong provided with spaced indicator elements for determining the spacing of the scale from the observer's eye, whereby the sighting scale can be held a fixed predetermined distance from the observer's eye while sighting on a tree, the dimension of which is to be determined.

4,497,118

MOTION AND ORIENTATION SENSOR

Barney L. Byrum, 7706 Tomlinson Ave., Bethesda, Md. 20034

Division of Ser. No. 936,386, Aug. 24, 1978, Pat. No. 4,365,421. This application Sep. 30, 1982, Ser. No. 429,492
Int. Cl.³ G01C 9/06
U.S. Cl. 33—366 15 Claims



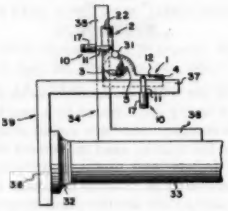
1. A device for determining orientation with respect to the vertical of an arbitrary plane called the object plane, said plane a portion of which represents an arbitrary object is fixed with respect to both the object and the device, comprising a first rod having cylinder geometry fixed to a plane of attachment at a suitable place thereon, said plane of attachment comprising the tangent plane to an arbitrary portion of the object's surface or that of a bracket or housing supporting the device; a reference plane at known orientation to the object plane and intersecting the axis of the first rod at known angle; a second rod having circular cylinder geometry the axis of which intersects the axis of the first rod at the pivot point of a pivot located at the end of the first rod distance L' measured along the axis of the first rod from its intersection with the reference plane; means for aligning the second rod with the vertical by rotating the second rod about the pivot point; means for fixing the second rod relative to the first rod; a datum plane a portion of which comprises either of the flat surfaces of a disk having right circular cylinder geometry, a portion of said flat surface being fixed to the second rod and intersecting the axis of the second rod at known distance c from the pivot point; and means for measuring y, the shortest line segment between said reference and datum planes of the generatrix of a cylindrical surface with its directrix a circle or ellipse in the reference plane and its generatrix parallel to the axis of the first rod, said surface intersecting the datum plane in a circle or ellipse; the angle B' between the axes of the first and second rods being ascertainable from y and other known quantities, and the orientation of the reference plane with respect to the vertical being ascertainable from B'.

4,497,119

PIPEFITTER'S PROTRACTOR

Timothy C. Dearman, 3002 S. Main St., Pearland, Tex. 77581

Filed Apr. 16, 1983, Ser. No. 486,103
Int. Cl.³ B43L 7/06
U.S. Cl. 33—464 7 Claims



1. A protractor for use with a welder's square or the like comprising a first body having along a linear side edge thereof a reduced thickness portion extending from said side edge inwardly of said body to form a planar ledge terminating inwardly of said side edge in a linear abutment parallel to said side edge; a second body in overlying relation with said first body and having along a linear side edge thereof a reduced thickness portion extending from said side edge of said second body inwardly thereof to form a second planar ledge terminating inwardly of said side edge of said second body in a second linear abutment parallel to said side edge of said second body, each of said ledges forming a flat seat for the removable accommodation of a leg of such square, said seats lying in parallel, spaced planes; clamp means carried by each of said bodies for forcibly urging against the abutment of the associated body a leg of such square seated on the ledge of the associated body; means coupling said bodies for relative rotation about an axis; and indicia carried by said bodies for indicating the relative angular positions thereof.

4,497,120

PROCEDURE AND APPARATUS FOR CHARGING AND EMPTYING THE DRYING TRAYS IN A DRYING BOX

Fritz Laemmermann, Frankenthal; Werner Rindfleisch, Mannheim; Wolfgang Fabian, Wilhelmsfeld, and Rudolf Polster, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

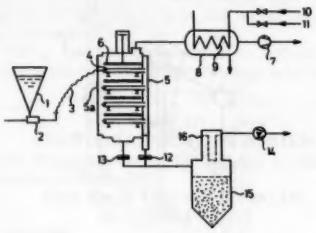
Filed Apr. 27, 1983, Ser. No. 489,213
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215753
Int. Cl.³ F26B 5/04
U.S. Cl. 34—15 10 Claims

1. An improved process for loading and unloading a drying tray within a drying box wherein a material may be dried by

heating and which drying tray is provided with a cover that may be raised and lowered relative to said tray to open and close said tray, said process comprising:

closing said tray;

pumping a pumpable solvent-moist starting material into the closed tray to fill said tray;



opening the filled tray and drying the material therein;

closing the tray upon the material being dried; and

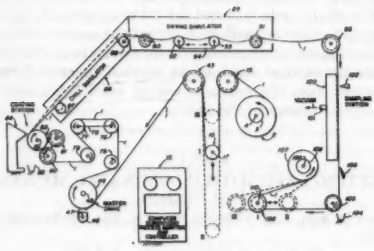
drawing air through the closed tray whereby to pneumatically convey the dried material from said tray.

4,497,121

PROCESS SIMULATOR

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 260,331, May 4, 1981, Pat. No. 4,362,122.
This application Jan. 10, 1983, Ser. No. 456,566
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—23 **50 Claims**



23. The process of simulating the drying of a web continuously moving at constant speed in succeeding drying zones of the same or different length with drying air of different quality in each zone, wherein a difference in quality means a difference in at least one of the air quality parameters flow rate, dry bulb temperature and humidity, said process comprising the steps of enclosing a section of an elongated strip of web in an insulating housing, supporting said section on spaced insulated idler rolls, oscillating said rolls back and forth in said housing, producing first and second streams of drying air of selected quality, and alternatively admitting said first and said second streams of drying air to said housing.

4,497,122

ROTARY COAL FEEDER AND DRYER

Jeffrey N. Nelson, and Thomas A. Peters, both of Bethlehem, Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Feb. 25, 1982, Ser. No. 352,335
Int. Cl.³ F26B *17/20*
U.S. Cl. 34—68 **3 Claims**

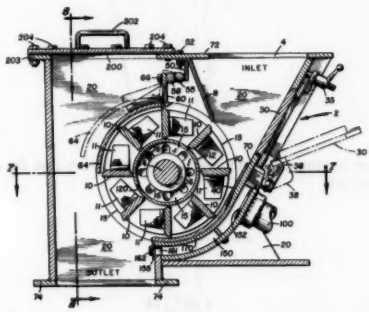
1. A feeder for lump material such as coal comprising:

a casing having a top inlet opening and a bottom discharge opening and first and second end walls;

a substantially hollow core extending between said first and second end walls and having a gas inlet and at least one gas exit communicating with the inside of said casing;

a shaft rotatably mounted inside the core and having a plurality of arms attached thereto and extending radially outward from said core;

a plurality of blades, each attached to one of said arms whereby the blades are mounted for rotation about said core within said casing and defining a plurality of pockets for carrying lump material from said inlet opening through said casing to said discharge opening;



a chamber in heat exchange relation to the bottom of the casing positioned near the discharge opening and having a gas inlet and at least one gas exit, and

first means for supplying hot gas to the gas inlet of the hollow core and second means for supplying hot gas to the gas inlet of said chamber whereby said core and said casing are heated;

said at least one gas exit of the core being positioned to permit hot gas to circulate through said core and be discharged into the casing to heat said blades;

said gas exit of the chamber being positioned to direct gas generally perpendicular to the path of lump material being discharged from said chamber.

4,497,123

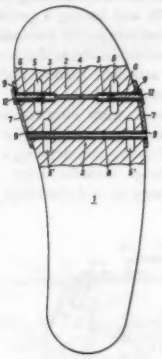
SHOE-SOLE AND METHOD FOR MAKING THE SAME

Johann Ehrlich, Krems, Austria, assignor to Patoflex Corporation, Cave Creek, Ariz.

Filed Mar. 4, 1982, Ser. No. 354,592
Claims priority, application Austria, Mar. 5, 1981, A1028/81
Int. Cl.³ A43B *13/04, 13/28*
U.S. Cl. 36—32 R **32 Claims**

1. A shoe sole construction comprising a sole made of a plastic material, and fastening means embedded in said sole for securing a shoe sole upper thereto, said fastening means comprising a die casting made by sprayed die casting from an unfoamed plastic material, and die casting extending substantially transversely across said sole from one side edge thereof to the opposite side edge thereof and having outwardly facing openings therein which communicate with the exterior of said

sole through the opposite side edges thereof for securing said upper thereof so that it abuts said side edges, said die casting

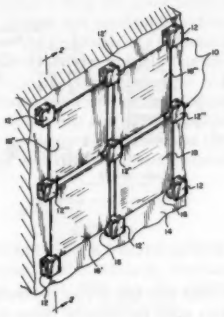


further having anchoring means for anchoring said die casting in said sole.

4,497,124
STETHOSCOPE IDENTIFICATION BADGE
Jerrel W. Olive, Apex, N.C., assignor to The Olive Company, Inc., Raleigh, N.C.
Filed Jun. 23, 1983, Ser. No. 507,042
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 R **1 Claim**

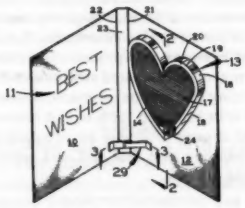
1. A stethoscope apparatus, comprising:
(a) a pair of ear pieces;
(b) a sound pickup piece;
(c) a Y-connector and tubing connecting the ear pieces to the pickup piece through the Y-connector; and
(d) an identification badge comprising:
(i) a structure formed of mated top and bottom cap pieces fitted to the Y-connector on opposite sides thereof with the legs of said Y-connector passing through apertures in sidewall portions of said pieces, each aperture being formed between the mated sidewall portions of said cap pieces;
(ii) securing means comprising portions of said top and bottom cap pieces snap-fitted together in a mating relationship under applied manual pressure to force the pieces together to maintain the pieces in securement on said Y-connector; and
(iii) a selected outer surface portion of at least one of said pieces being adapted to receive name indicia thereon.

4,497,125
WALL DISPLAY DEVICE
Daniel M. Hutchinson, 740 Woodland Ave., Mantua, N.J. 08051
Filed Jul. 27, 1983, Ser. No. 517,669
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—10 R **13 Claims**



1. A support device for holding on a wall semi-rigid panels at their corners comprising:
a plurality of blocks each having an attachment means for firm attachment of each block to a wall,
wherein each block has a front face, two side faces, a top face and a bottom face, and
wherein each block has two vertical channels each opening on opposite side faces with each channel extending through the bottom face of a width to receive the thickness of the semi-rigid panels to be held, and
wherein each block has two vertical corner channels both opening through the top face and one of them opening through one side face and the other opening through the opposite side face with each corner channel terminating at a bottom stop in the downwardly direction at a depth less than the vertical depth of the vertical channels from the bottom face, the corner channels being of a width to receive a corner of the panels.

4,497,126
GREETING CARD WITH ILLUMINATED MESSAGE AND DESIGN
Rodrigue Dejean, 2220 Fillmore St., Apt. 104, Hollywood, Fla. 33020
Filed Apr. 6, 1984, Ser. No. 597,696
Int. Cl.³ G09F *1/00*
U.S. Cl. 40—124.1 **13 Claims**



1. A greeting card with illuminated design and reflective message comprising:
a folding card having at least a first and a second inside surface joined by at least one fold;
at least one raised design having an interior design space and a window attached to said first inside surface;
a reflective message attached to said second inside surface;

a folding light switch operatively attached to said first and second inside surfaces;

at least one electric light source disposed inside said raised interior design space;

a reflector for reflecting light from said light source onto said reflective message;

an electric battery;

wiring for interconnecting said folding light switch, said light source and said battery, said wiring constituting an electrical circuit;

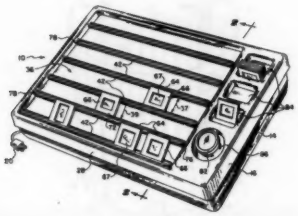
said folding light switch operating to activate said light source when said card is opened along said fold.

4,497,127

PHOTOGRAPHIC SLIDE SORTER

Steven M. Breslau, Evanston, Ill., assignor to Sima Products Corporation, Chicago, Ill.

Filed Apr. 8, 1983, Ser. No. 483,165
Int. Cl.³ G02B *27/02*
U.S. Cl. 40—367 **6 Claims**



1. A photographic slide sorting and handling device for retaining a plurality of rectangular-shaped slides to be viewed and sorted upon a surface comprising, a sorting surface having a generally rectangular shaped depression formed therein, a plurality of parallel spaced troughs formed in and extending the elongate length of said depression, a plurality of elongate channel shaped slide support members arranged in parallel spaced disposition above said sorting surface and being secured to said sorting surface at the location of said troughs, each said slide support member including a respective slide-receiving slot formed along the elongate length thereof, said slide-receiving slot being of generally C-shaped cross-sectional configuration with a mouth defined by a bottom wall disposed generally parallel to said sorting surface and a top wall disposed in spaced relationship to said bottom wall but at a generally acute angle with respect thereto, a slide resting surface formed on each support member spaced above said slide-receiving slot and extending along the elongate length thereof, said slide resting surface being defined by the top wall of said slide-receiving slot, the slide-receiving slot of each support member being adapted for receipt therein of an edge of a photographic slide with the opposite edge of the slide engaged against the resting surface of the next adjacent support member, the dimensions of the slide-receiving slot of each support member being such as to permit selected slides to be inserted into said slot and freely moved along the support members during sorting of the slides but prevented from falling out of the slide-receiving slot if the device is jostled or otherwise accidentally jarred during use thereof.

4,497,128

SINGLE-CHANNEL MICROFICHE MASTER

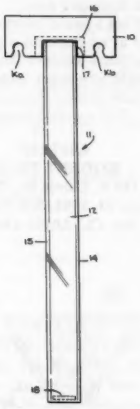
Mark O'Connor, Freeport, N.Y., assignor to NB Jackets Co., Chicago, Ill.

Filed Aug. 4, 1980, Ser. No. 174,900
Int. Cl.³ B42F *5/00*
U.S. Cl. 40—405 **7 Claims**

1. A single-channel microfiche master for housing a strip of microfilm having a predetermined width and having a series of image frames thereon, and updating add-on film chips of the same width, said master being reproducible by contact printing to provide reference copies, said master comprising:

a rectangular tab having a pair of notches cut into the lower edge thereof at spaced positions, said tab being bridgeable across a pair of notch-receiving rails; and

a jacket formed by superposed front and rear panels of transparent plastic material interconnected by prallel ribs to define a single channel having a width substantially



equal to said predetermined width for accomodating the microfilm strip and said add-on chips, said front panel being thinner than said rear panel to facilitate contact printing, one end of the jacket being secured to the tab at a position intermediate the notches, whereby the jacket and the tab form a T-shaped structure, one of the panels having a slot therein adjacent the free end of the jacket to permit endwise machine insertion of the strip and the chips into the channel.

4,497,129

FISHERMAN'S ACCESSORY

Billy D. Chestnut, Rte. #1, Box 299, Magnoli, N.C. 28453

Filed Nov. 23, 1982, Ser. No. 443,879
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—21.2 **3 Claims**

1. A fishing device for supporting a fishing rod comprising:

a ground engaging post;

a cylindrical rod holder opened at one end to receive a fishing rod and at least partially closed at the other end to support the fishing rod;

a combined bait box and cutting board integral with said rod holder;

said bait box having four walls forming a square box and a bottom;

said cutting board having a horizontal surface for cutting where said cutting board has a portion forming the bottom of said bait box; and a slot in said fishing device for receiving said ground engaging post,

said cutting board has a pair of support means extended from said rod holder at an angle to a point under the cutting surface, and a third support extending from said rod holder at an angle to a point under said bait box bottom portion.

4,497,130

RODENT TRAP

John P. Fitzgerald, 119 S. Culver St., Baltimore, Md. 21229

Filed Jul. 13, 1983, Ser. No. 513,167

Int. Cl.³ A01M *19/00*

U.S. Cl. 43—98 **2 Claims**

1. A rodent trap, comprising, in combination, a plastic housing and an electrical mechanism in said housing for automatically electrocuting a rodent entering therein; said housing comprising a tube which is open at opposite ends, and having downwardly converging opposite side walls, a bait inside the center of said tube being affixed to the ceiling thereof, and an upwardly arched, elongated, flexible, spring steel ramp upon the floor of said housing; and said electrical mechanism comprising a switch mounted upon said floor and underneath said ramp, for being depressed thereby when a rodent walks thereupon heading for said bait, said switch being in an electrical circuit with a pair of elongated contact strips mounted along lower portions of facing sides of said side walls, and with an exterior electric power source.

4,497,131

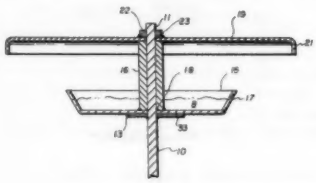
SAFETY BAIT DISPENSER

Donald D. Hicks, Geraldine, Mont. 59446

Filed Dec. 8, 1981, Ser. No. 328,485

Int. Cl.³ A01M *1/20*

U.S. Cl. 43—131 **9 Claims**



1. An apparatus for safely dispensing poisonous bait or the like comprising in comination:

a centrally disposed anchoring spike around which is disposed a lower bait pan, and an upper cover pan, a spacer therebetween providing a peripheral open area wherein said bait pan has an upwardly and outwardly extending peripheral lip and wherein said cover pan has a vertically downwardly depending peripheral lip wherein said bait pan has a stop means affixed to a bottom surface thereof in a location to abut against a flat washer affixed to said spike whereby said cover pan can only be removed from said spike when said bait pan is still in the ground by grasping said bait pan and rotating said cover pan.

4,497,132

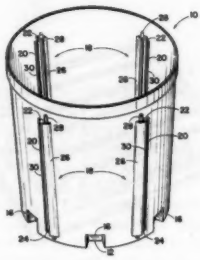
AIR-ROOT-PRUNING CONTAINER

Carl E. Whitcomb, Stillwater, Okla., assignor to Board of Regents for the Oklahoma Agricultural and Mechanical Colleges Acting for and on Behalf of Oklahoma State University, Stillwater, Okla.

Filed Nov. 9, 1981, Ser. No. 309,085

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—66 **11 Claims**



1. A container adapted to contain a growing medium and a plant comprising:

(a) a bottom wall;

(b) a circumferential upwardly extending sidewall attached to the perimeter of said bottom wall thus forming an open-topped container; and

(c) one or more vertical air-root-pruning means displaced in said sidewall forming an air gap offset from said sidewall, to air-prune roots of said plant thus inhibiting the tendency of said roots to grow in a spiral and stimulating additional root branching.

4,497,133

PET DOOR WITH CONTROL CIRCUIT THEREFOR

Philip T. Blenkinsop, 56 Chapel La., Fowlmere, nr. Royston, Hertfordshire, England

Filed Apr. 19, 1983, Ser. No. 486,533

Claims priority, application United Kingdom, Apr. 23, 1982, 8211861

Int. Cl.³ E05F *15/20*

U.S. Cl. 49—31 **6 Claims**

1. A control circuit for unlatching a door and comprising a transmitter coil,

means for pulse energising said transmitter coil,

means connected to said transmitter coil for detecting the frequency of a.c. components produced in the current in said transmitter coil by interaction of said transmitter coil with an outside object and for comparing the detected frequency with a standard frequency, and

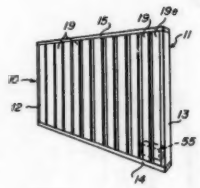
means responsive to the detecting and comparing means for operating the latch if said detected frequency is substantially equal to said standard frequency.

4,497,134

EXTERIOR LOUVER AND LOUVER APPARATUS

Bruce E. Meyer, 5649 E. Greenwood Pl., Denver, Colo. 80222, and John S. McIntosh, 7165 Newton St., Westminster, Colo. 80030

Filed Sep. 13, 1982, Ser. No. 417,354
Int. Cl.³ E06B *7/08*
U.S. Cl. 49—91 **23 Claims**



1. In an exterior louver apparatus, the combination comprising:

a frame including an oblique frame member and another frame member opposite and spaced from said oblique frame member;

a plurality of exterior louvers extending between said frame members, said louvers being movable about a pivotal axis between open and closed positions, each said louver having pivot pins at the opposite ends adjacent one longitudinal edge, said pivot pins being supported in alined holes in said frame members in a bearing means, means including a sleeve bearing and a ball-like bearing which together form a universal-type joint at one end of each louver to provide for a free pivot action of each louver; and

a louver position control means extending between and pivotally connected to each louver for simultaneously rotating said louvers about their pivotal axes between said open and closed positions.

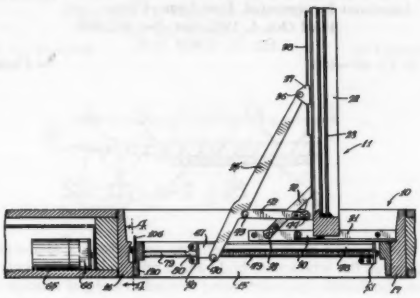
4,497,135

AUTOMATIC OPERATOR AND LOCKING MECHANISM FOR A CLOSURE

Gregory J. Vetter, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Nov. 15, 1982, Ser. No. 441,547
Int. Cl.³ E05F *15/00*
U.S. Cl. 49—280 **16 Claims**

1. An automatic operator and locking mechanism for a closure comprising, means connected between the closure and a closure frame operable to open and close the closure, means releasably connectable between the closure and the closure frame for releasably locking the closure in closed position, a power source, gearing connected between the power source and both of said means and having an input means operatively connected to the power source and a pair of output connections operatively continuously connected one to each of said means, said gearing being operable to continuously apply force to both said means and drive the output connection having the least resistance to movement, and trigger means movable by closure contact and responsive to the open or closed position of the closure for controlling the resistance applied to the



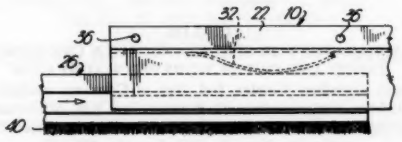
output connection operatively connected to the means for releasably locking the closure.

4,497,136

SELF-ADJUSTING WEATHER STRIP

George Khallil, P.O. Box 481, Kentville, Nova Scotia, Canada

Continuation of Ser. No. 886,411, Mar. 14, 1978,. This application Dec. 9, 1983, Ser. No. 560,252
Claims priority, application Canada, Mar. 15, 1977, 224,043
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—481 **1 Claim**



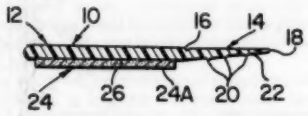
1. A self-adjusting weather strip assembly comprising a main aluminum extrusion having a flat elongate base plate with an integral channel therealong, said channel being rectangular in cross section having a first side wall and a second side wall, said first side wall having a smooth and uninterrupted surface, said second wall having an elongate opening therealong; a second elongate aluminum extrusion configured generally as an I beam in cross section, one cross bar of the I beam being approximately square in cross section and being adapted to be slidably received in the channel of said main extrusion with the stem of the I beam passing through said elongate opening thereof, the other cross bar of said I beam having an elongated slot an elongate weather strip facing member comprising an elongate pile strip and rigid backing said backing being slidable and retained in said slot with said pile extending outwardly therefrom; a plurality of curved bar springs slidable within channel between the first side wall and the square bar of said I beam and movable from one end to the other, each of said spring means having an integral short extension projecting from one end thereof and a curvature to press said square bar against said second side wall, said integral extension biting the surface of said first wall to maintain said spring means and said main and second elongate extrusions in relatively stationary selected positions when so pressed and freely movable relative to each other upon removal of said second elongate extrusion from said first extrusion.

4,497,137

WEATHER STRIP

Jon N. Nelson, Golden, Colo., assignor to Energy Conservation Associates Incorporated, East Lyme, Conn.

Filed Oct. 5, 1982, Ser. No. 432,802
Int. Cl.³ E06B 7/16
U.S. Cl. 49—496 **4 Claims**



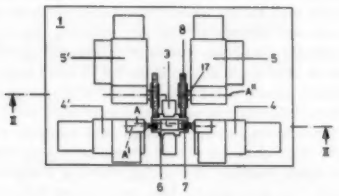
1. A resilient plastic weather strip comprising a semi-rigid, elongated flat attachment body and a relatively flexible extension, the flexible extension being formed in integral relation to the flat attachment body along one side edge thereof and defining a juncture between the flat attachment body and its flexible extension, the juncture defining a longitudinally extending flex axis, the flexible extension being deflectable about said longitudinally extending flex axis between a relaxed nonsealing position and a deflected sealing position, the flexible extension being tapered from said juncture to a free terminal edge and providing a variable pliancy which gradually increases in flexibility laterally across the flexible extension toward said free terminal edge, the flexible extension in its relaxed nonsealing position having one surface extending in its entirety in generally coplanar relation to a corresponding surface of the flat attachment body, the flexible extension in its deflected sealing position assuming a substantially planar condition diverging at an angle relative to the flat attachment body, the flexible extension having a plurality of longitudinally extending ribs formed on a sealing surface of the flexible extension in parallel relation to said longitudinally extending flex axis.

4,497,138

APPARATUS FOR SIMULTANEOUSLY GRINDING INNER AND OUTER WORKPIECE SURFACES

Jürgen Schreiber, Wetzlar, Fed. Rep. of Germany, assignor to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany

Continuation of Ser. No. 318,259, Nov. 4, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,433
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041663
Int. Cl.³ B24B 7/00
U.S. Cl. 51—3 **3 Claims**



1. A grinding apparatus for simultaneously machining internal and external surfaces of both ends of a tubular workpiece, the apparatus comprising:

a base;

means including a double-membrane hydraulic chuck of the centerless type on said base annularly surrounding said workpiece for supporting said workpiece between its ends for rotation about an axis passing through said ends;

drive means connected through said chuck to said workpiece for rotating same about said axis;

respective first grinder means on said base at each axial end of said chuck means and engaging therein for grinding respective internal surfaces of the ends of said workpiece in said chuck means;

respective second grinder means on said base to each axial side of said chuck means for grinding respective external surfaces of the ends of said workpiece in said chuck means while said first grinder means are grinding said internal surfaces of the ends of said workpiece; and

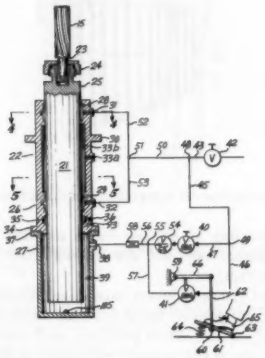
securing means for retaining both of said grinder means releasably on said base at the respective axial ends of said workpiece adjacent said chuck means.

4,497,139

APPARATUS FOR PRECISION GRINDING OF END MOUNTED OBJECTS

Clarence R. Adams, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 374,722, May 4, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 640,202
Int. Cl.³ B24B 3/02
U.S. Cl. 51—95 LH **25 Claims**



1. Apparatus for supporting an object while it is being dressed and for moving the object relative to dressing means positioned to be contacted by a side portion of the object during axial travel of the object, comprising:

a vertically oriented support assembly that includes a piston member, and a cylinder member having an open end into which the piston member is received; one of said members being movable and having a pressure surface, and the other of said members being fixed; and said members defining a variable volume chamber therebetween, with at least a portion of said chamber being below said pressure surface;

mounting means for securing the object in a vertical position to an outer end portion of said movable member;

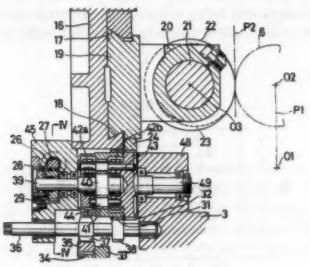
supply means for continously supplying pressurized fluid into said chamber and to said pressure surface to exert an upward force on said movable member that is less than the combined weight of said movable member and the object secured thereto by a predetermined amount to thereby counterbalance a portion of said combined weight;

moving means for exerting an additional upward force on said movable member to move said movable member and said object axially upwardly;

leak means for allowing the pressurized fluid supplied to said pressure surface to leak away from said pressure surface to in turn allow the downward force of said combined weight alone, without the application of any other downward force, to move said movable member and said object axially downwardly at a controlled rate upon removal of the additional upward force of the moving means; and

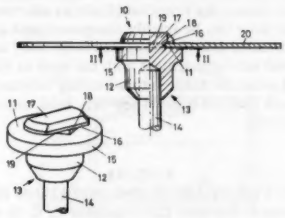
pressurized fluid bearing means between said piston member and said cylinder member.

4,497,140
CAM GRINDING MACHINE
Tsuyoshi Koide, Toyota; Toshio Maruyama, and Toshio Tsujiuchi, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
PCT No. PCT/JP82/00082, § 371 Date Jul. 12, 1982, § 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/03592, PCT Pub. Date Oct. 28, 1982
PCT Filed Mar. 27, 1982, Ser. No. 403,509
Claims priority, application Japan, Apr. 20, 1981, 56-58452
Int. Cl.³ B24B *17/02*
U.S. Cl. 51—101 R **7 Claims**



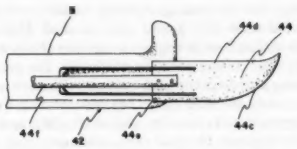
1. A cam grinding machine comprising:
a bed;
a traverse table slidably mounted on said bed for indexing a workpiece to be ground by a grinding wheel;
a swingable support pivotably mounted on said traverse table;
a plurality of master cams mounted on said swingable support and rotatable synchronously and coaxially with said workpiece;
a roller support mounted on said traverse table to be movable in the direction parallel to the axis of said master cams;
a large diameter cam roller and a small diameter cam roller supported on said roller support and spaced from one another by a distance different from a pitch of said master cams in the axial direction of said master cams;
urging means for pivotably urging said swingable support to bring said master cams into contact with one of said cam rollers so as to generate a cam profile on said workpiece during rotation of said master cams; and
cam roller moving means for moving said roller support so as to bring one of said cam rollers into face to face relation with one of said master cams, said cam roller moving means including:
a rack secured to said roller support;
a star gear shaft rotatably mounted on said traverse table and having a star gear fixedly provided thereon;
dogs secured to said bed for selective meshing with said star gear;
a planetary gear mechanism having a sun gear for operably connecting said rack with said star gear; and
driving means composed of a linear motion cylinder device for rotating said sun gear so as to move said roller support by an amount equal to said distance in the axial direction of said master cams when said star gear is prevented from rotating due to the engagement with one of said dogs, and for preventing the rotating of said sun gear so as to move said roller support by an amount equal to said pitch through the engagement of said star gear with one of said dogs when said traverse table is slid for indexing said workpiece.

4,497,141
SMOOTHING, CUTTING AND POLISHING TOOL
Sven Jarby, Riethalde, CH-9658 Wildhaus, Switzerland
Filed May 31, 1983, Ser. No. 499,565
Int. Cl.³ B24B *45/00*
U.S. Cl. 51—168 **20 Claims**



1. A method of mounting and operating a disc as a rotary tool on a disc drive subject to rotation in a first sense and alternatively in an opposite second sense of rotation, comprising in combination the steps of:
providing a disc supporting surface on the disc drive; and
releasably retaining the disc on the disc supporting surface in a first force-transmitting relationship with the disc drive for said first sense of rotation, but providing play between said releasably retained disc and the disc drive for movement of the disc into an alternate second force-transmitting relationship upon reversal of the disc drive to said second sense of rotation.

4,497,142
BUSH AX SHARPENING HOLDER AND METHOD OF RETAINING
L. A. Sessoms, Rte. 1, Box 63-A, Clarkton, N.C. 28433
Filed Jan. 27, 1983, Ser. No. 461,589
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—218 R **2 Claims**



1. A bush ax sharpening blade holder for receiving and supporting a bush ax of the type having an elongated handle and a blade projecting from said handle in a plane that extends parallel to the longitudinal axis of said handle, and wherein said bush ax holder is adapted to be mounted to a support structure such as a vehicle bumper for holding the bush ax during sharpening, said bush ax sharpening holder comprising in combination: an elongated main body in the form of a generally U-shaped channel structure having two laterally spaced upstanding elongated sides disposed in spaced apart relationship with respect to each other, a frame structure interconnecting said elongated sides of said U-shaped channel-like main body, and opposite open ends formed on opposite ends of the generally U-shaped channel structure; an elongated handle receiving area defined between said laterally spaced sides of said elongated main body for receiving said handle of said bush ax; mounting means operatively associated with said main body for securing said bush ax sharpening holder to a support structure such as a vehicle bumper; a pair of elongated slots formed in the upstanding sides of said main body and extending longitudinally along the said elongated sides from an open end of

said main body a predetermined distance toward the opposite end where the slots terminate and define a blade stop, said slots being aligned and lying in a plane that extends parallel to the longitudinal axis of said handle when the same is disposed within said handle receiving area and held by said bush ax sharpening blade holder, whereby said bush ax blade can be received within said slots such that the cutting edge thereof will project outwardly from said bush ax sharpening holder wherein the same can be readily sharpened; and a screw type tightener threaded into the elongated main body and operable to be screwed into engagement with the bush ax blade so as to engage and press the blade into a binding relationship within said slots such that the blade is securely held within said elongated main body.

4,497,143

DEVICE FOR SHARPENING ROTATING BLADES

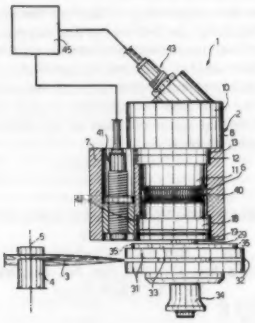
Riccardo Mattei, Bologna, Italy, assignor to G. D Societa' per Azioni, Bologna, Italy

Filed Jul. 8, 1983, Ser. No. 511,987

Claims priority, application Italy, Jul. 14, 1982, 3484 A/82

Int. Cl.³ B24B *3/36*

U.S. Cl. 51—248 **7 Claims**



1. A device for sharpening rotating blades, comprising at least one grindstone (31) keyed onto a shaft (24) rotatable about its axis inclined with respect to an axis (5) of rotation of an associated said driven rotating blade (3), the periphery of this latter being able to come into contact with each said grindstone (31) to carry the said shaft (24) into rotation by friction; a movable support (11) for the said shaft (24), and actuator means (39) to displace the said movable support (11) for the purpose of varying the relative position of the said blade (3) and each said grindstone (31), characterised by the fact that it includes first control means (41) sensitive to the speed of rotation of the said shaft (24), connected to the said actuator means (39) to maintain the said speed above a predetermined value, and second control means (43) for maintaining, in use, the distance between the said axes (5,24) within a predetermined range of values.

4,497,144

METHOD FOR MANUFACTURING QUADRIC SURFACE

Hiroshi Kobayashi, Kodaira, and Haruhiko Machida, Tokyo, both of Japan, assignors to Machida Endoscope Company Limited, Tokyo, Japan

Continuation of Ser. No. 276,737, Jun. 24, 1981, abandoned. This application Jun. 28, 1982, Ser. No. 625,192

Claims priority, application Japan, Jun. 26, 1980, 55-86964; Feb. 2, 1981, 56-14691

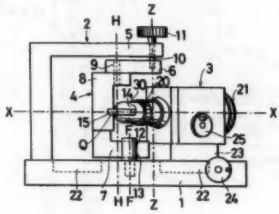
Int. Cl.³ B24B *1/00, 13/00*

U.S. Cl. 51—284 R **15 Claims**

1. A method for manufacturing a quadric surface on a workpiece comprising:

providing a bed for supporting an apparatus for manufacturing said quadric surface, said bed being parallel to an X-Y plane;

securing a working tool having a linear working edge to a tool mounting assembly which comprises a supporting frame mounted on said bed, a tool holding member having a substantially U-shaped side-elevational configuration including an upper arm and a lower arm connected to said upper arm by a middle tool carrying portion, the upper arm being journalled to the supporting frame so as to be rotatable with respect to said frame and being pivotably connected to said middle tool carrying portion by a connecting rod so that said upper arm is pivotable relative to said middle portion, and the lower arm being journalled to said bed by a focus shaft whereby said tool holding member is rotatable about said focus shaft extending in an XZ plane passing through an origin of rectangular coordinates of X, Y and Z axes and being in parallel with the Z axis, said lower arm being slidably connected to said focus shaft so as to be slidable linearly in parallel with the XY plane,



and said connecting rod having an axis which is parallel to the Z axis said working tool being arranged in such a manner that its working edge is faced against an axial line of said focus shaft and lies in the XY plane and that a longitudinal direction of the working edge makes an angle θ with respect to a line which is obtained by projecting a sliding direction of said tool holding arm onto the XY plane; moving a cross point between the working edge and said projected line along a circle having a center at the origin of the XY coordinates;

securing a workpiece to be shaped to a workpiece mounting member, slidably and rotatably mounted on said bed in such a manner that a center axis of the workpiece lies in an X'Z plane formed by the Z axis and an X' axis which is obtained by rotating the X axis by an angle $(\pi/2-\theta)$ about the focus shaft; and

moving the working tool and the workpiece relative to each other to form the workpiece into a quadric surface in accordance with the quadric surface formed by said working edge as an envelope of tangents.

4,497,145

SOLAR WARMING HUT

David W. Louwenaar, 1248 Ironton St., Aurora, Colo. 80010

Filed Mar. 15, 1982, Ser. No. 357,902

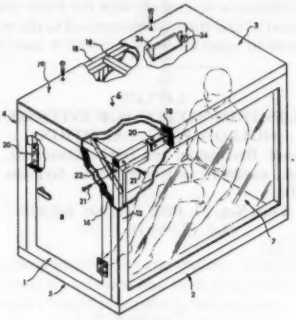
Int. Cl.³ E04H *9/00;* **A61H** *33/06*

U.S. Cl. 52—1 **6 Claims**

1. In a warming hut formed by detachably connected enclosure-forming surfaces, one of which has an entrance, wherein the improvement comprises:

six enclosure-forming surfaces detachably connected at their edges wherein at least five of the six enclosure-forming surfaces each have an outer plywood layer and an inner plywood layer separated by at least four wooden spacers arranged to coincide with the edges of the enclosure-forming surfaces which are constructed in a rectangular shape to form an air space between said outer plywood layer, said inner plywood layer and said spacers and wherein the enclosure-forming surfaces further comprise four vertical walls of equal height, a roof and a floor all of

which have a total surface area of from about 100 square feet to about 260 square feet, and wherein a major portion of the inside surface of the inner plywood layers are further provided with an opaque coloring, and wherein at least one of the vertical walls is further provided with a window comprised of a sunlight transmitting surface



having an area of from about six square feet to about 100 square feet, whereby a significant amount of sunlight passing through the window strikes the opaque coloring on the inside surface of the inner plywood layers and thereby gives up energy which raises warming hut's interior temperature.

4,497,146

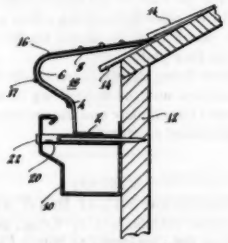
HANGERS FOR RAIN GUTTER DEVICES

Robert J. Demartini, 3500 Canter La., Raleigh, N.C. 27604

Filed Jul. 6, 1982, Ser. No. 395,852

Int. Cl.³ E04D *13/06*

U.S. Cl. 52—12 **4 Claims**



1. A device for positionally fixing a rain deflector of the type which utilizes the surface tension of roof run-off rainwater to cause the water to follow the arcuate surface of the device to an associated rain gutter which has a front lip while causing leaves and other debris to be jettisoned away from said gutter comprising

a strip-like continuum having an upper support segment and an arcuate segment adapted to be juxtaposed to the underside of the deflector to be associated therewith, and a riser segment for positioning the height of said upper support segment and said arcuate segment with respect to said gutter, and

affixation means for positionally affixing said device with respect to said gutter, wherein said affixation means comprises a set back segment and a lip-front segment for affixation to the front lip of said gutter.

4,497,147

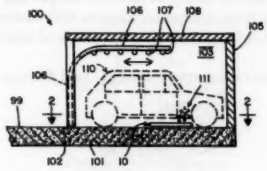
DRIPS-CATCHING MATS FOR GARAGE FLOORS AND THE LIKE

David D. Clapper, 1306 Peterson Dr., Omaha, Nebr. 68130, and Thomas E. Talmadge, 4803 N. 80th Ave., Omaha, Nebr. 68134

Continuation-in-part of Ser. No. 219,445, Dec. 23, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,725

Int. Cl.³ B32B *7/00*; **E04H** *6/42*

U.S. Cl. 52—105 **3 Claims**



1. In combination with a motor vehicle garage having a substantially horizontal floor of a finite floor-area defined by a floor-perimeter, the improvement of a drips-catching mat for capturing oleaginous material dripping from a motor vehicle parked upon said garage floor in overlying relationship to said mat, said mat having a finite overall-area defined by a mat-perimeter remotely surrounded by the floor-perimeter, said drips-catching mat comprising the following generally horizontally extending laminar elements:

A. an oleo-resistant and generally non-perforated base member layer having a finite base-area not exceeding said overall-area and defined by a base perimeter, said base member having a pair of opposed broad horizontal surfaces including an upper-surface and a lower-surface, said base member being semi-permanently bonded to the garage floor with high-tenacity means located below said lower-surface;

B. a blotter member layer having a finite blotter-area not exceeding said overall-area and defined by a blotter-perimeter, said blotter member layer comprising two coextensive solid horizontal strata including a thicker lower-stratum comprising porous cellulosic structural material and a thinner oleaginous upper-stratum adhered to the lower-stratum whereby said upper-stratum causes horizontal spreading of oleaginous liquid drippings and thereby decreases the time for such drippings to become fully absorbed by the porous cellulosic lower-stratum, said blotter member lower-stratum being above the base member upper-surface and a finite-elevation above the garage floor and being removably attached to the base member with a lower-tenacity means, said lower-tenacity means being markedly lower in physical strength than the high-tenacity means whereby an upward manual force applied to the blotter-periphery will delaminate the blotter member from the base member without accompanying delamination of the base member from the garage floor; and

C. visual indicator means attached to the blotter member upper-stratum to indicate whenever the blotter member has become substantially fully laden with oleaginous drippings and needs replacement with a substitute blotter member.

4,497,148

PANEL CONNECTOR SYSTEM

José A. Lopez, Miami, Fla., assignor to Camilo Muebles, Inc., Coral Gables, Fla.

Filed Mar. 22, 1982, Ser. No. 360,558

Int. Cl.³ E04B *2/76*

U.S. Cl. 52—126.3 **17 Claims**

1. A panel connector system for coupling a pair of adjacent panels, comprising:

first and second elongated channels having mounting means

for attaching said channels to adjacent portions of adjacent panels, said channels extending substantially the entire height of the panels, each said channel including

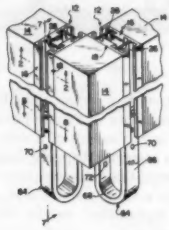
a base,

first and second end flanges extending from opposite ends of said base, and

a central tenon extending from said base in the same direction as said end flanges,

said first channel being spaced from and facing said second channel such that said end flanges and central tenon of said first channel are aligned with and extend toward said end flanges and central tenon of said second channel;

first and second pairs of fittings, said fittings of each pair



having a length significantly less than that of said channels, being coupled by fasteners and connecting said central tenons, each said fitting being generally T-shaped in transverse cross section with a center post extending between said central tenons and laterally extending arms engaging said central tenons, said first pair being spaced from said second pair along the length of said channels, said fitting having outwardly facing surfaces laterally spaced inwardly from said end flanges providing spaces between said end flanges and said outwardly facing surfaces; and

a support member depending from and adjustably coupled to said channels between said end flanges thereof;

whereby said end flanges are accessible and unobstructed for coupling accessory structures.

4,497,149

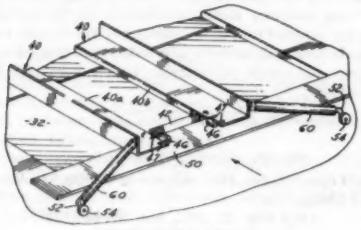
LUBRICATING APPARATUS AND SYSTEM

Lawrence A. Schott, 15940 Warwick Rd., Detroit, Mich. 48223, and Roger A. Schott, 15060 Seminole, Redford, Mich. 48239

Division of Ser. No. 58,117, Jul. 16, 1979, Pat. No. 4,290,462. This application May 18, 1981, Ser. No. 264,788

Int. Cl.³ F16C *3/14*

U.S. Cl. 52—174 **2 Claims**



1. A vehicle support track assembly for supporting a vehicle at a service area which comprises:

(a) a pair of parallel tracks in spaced relation,

(b) means to support said tracks adjacent a service stall for movement transversely in relation to each other,

(c) means responsive to contact with the front wheels of a vehicle to cause said track to move to register with the track width of a particular vehicle, and

(d) a cable response system incorporated with said transversely movable tracks wherein a transverse force on said means responsive to contact with the front wheels at the lead in end of said tracks is transmitted to the other end of said tracks to cause an equal response at said other ends.

4,497,150

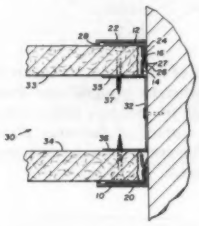
DRIVE-IN TRIM SYSTEM FOR INTERSECTING HOLLOW WALL PARTITIONS

Alan C. Wendt, Barrington, and David Krakowski, Deerfield, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 423,925

Int. Cl.³ E04F *19/04*

U.S. Cl. 52—242 **5 Claims**



1. A trim system for the intersections of paneled partitions which comprises:

an L-shaped retainer clip comprising a first leg, a second leg substantially perpendicular to and continuous with the first leg, the second leg having a detent formed therein,

the first leg being secured to a first partition and the second leg extending between the edge of the panel in the first partition and the face of the intersecting partition, and

an L-shaped trim piece comprising a face plate and a clinch plate, the clinch plate having a lip on its inner surface distal to the face plate;

the clinch plate being driven between the face of the intersecting partition and the second leg of said retainer clip, the lip of said clinch plate and the detent of the second leg being in frictional engagement.

4,497,151

STANDING SEAM METAL ROOF ASSEMBLY

Harold G. Simpson, Oklahoma City, Okla., and Bert D. Hollman, Saint Joe, Ind., assignors to Nucor Corporation, Charlotte, N.C.

Filed Sep. 28, 1982, Ser. No. 425,477

Int. Cl.³ E04D *1/34, 3/362*

U.S. Cl. 52—520 **7 Claims**

1. In a standing seam floating roof assembly a pair of metal panels, each having elongated side portions and shorter end portions, one of said side portions being formed with an upwardly directed male standing seam section and the other of said side portions being formed with an upwardly directed female standing seam section, said male section having a downwardly directed part and said female section having a downwardly directed part, each of said downwardly directed parts having a substantially horizontal component, the horizontal component of the female portion positioned out of contact with the downwardly directed part of the male portion, adjacent panels positioned with said male and female sections being interlocked with the horizontal component of said female section contacting the horizontal component of said male

section and urging it upwardly, a resilient sealant positioned at the uppermost portion of the standing seam formed by said

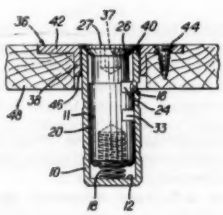
male and female sections, the construction being such that said sealant is clamped between said male and female sections by the horizontal component of the female portion.

4,497,152

DISAPPEARING ANCHOR

David W. Weissner, Patchogue, N.Y., assignor to Meyco Products, Inc., Hicksville, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,674
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—709 **4 Claims**



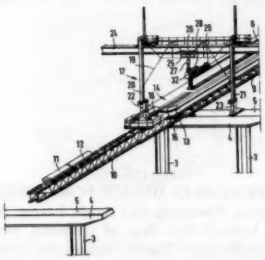
1. In an anchor device comprising a housing having an axial bore opening externally at its upper end, a substantially cylindrical plunger element forming a part of said anchor device and adapted to fit slidably within said axial bore and to be locked against the force of a spring means within said housing in at least one of a first position in which a top surface of said plunger is flush with a top surface of said cylindrical housing, and a second extended position in which said plunger element is locked so that its top surface is at a distance above said top surface of said cylindrical housing thereby presenting a neck to which an object to be secured by said anchor is fixed, the improvement wherein said anchor device further comprises a means for fixing said anchor in a wooden surface comprising a collar member having an axial sleeve defining a central aperture, and a radially extending flange, wherein an inner surface of said axial sleeve and an outer surface of said cylindrical housing axially coextensive with said inner surface of said axial sleeve are each provided with cooperating means for fixing said collar member to said cylindrical housing so that an upper surface of said radial flange is flush with said top surface of said cylindrical housing.

4,497,153

METHOD AND DEVICE FOR ERECTING BUILDING STRUCTURES SUCH AS BRIDGES, USING PRE-FABRICATED CONCRETE BEAMS

Eberhard Müller, Siegburger Str. 149-151, D-5000 Köln 21, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 389,083
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124038
Int. Cl.³ E01D *1/00*
U.S. Cl. 52—745 **4 Claims**



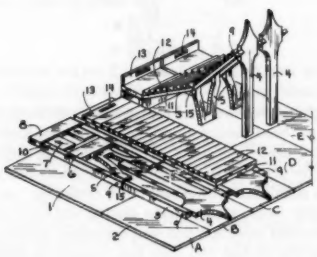
1. Method for erection of structures such as bridges, at a site, using pre-fabricated concrete beams, characterized by the fact that the individual, pre-fabricated beams are produced, at the site, on a feed rigging in the associated work area of the structure, in a heated and laterally tiltable form, and then emplaced in their final position in this work area, and that the feed rigging comprises a support scaffolding and flexure of the support scaffolding of the feed rigging is continuously equalized during concretizing of the pre-fabricated beams.

4,497,154

METHOD OF CONSTRUCTING AND ASSEMBLING BUILDING ELEMENTS FOR FOLDABLY CONSTRUCTED STADIUMS

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

Filed Dec. 17, 1982, Ser. No. 437,812
Int. Cl.³ E04G *21/00*; E04H *3/10*
U.S. Cl. 52—745 **20 Claims**



1. Method of constructing and assembling a modular stadium having an inner and an outer perimeter, comprising the steps of constructing in situ a foundation for said stadium; constructing over said foundation a series of modules having side edges and inner and outer ends, each of said modules disposed along the inner perimeter of said stadium, the side edges of each of said modules disposed along lines originating at the center of curvature of said inner perimeter, and the inner end of said module coincident with said inner perimeter, and the outer end of said module a distance away equal to the developed length of said side edges measured along said side edges, and the length of the

outer end of said module equal to the length between said side edges measured at the said outer perimeter of said stadium; and constructing a girder having inner and outer ends along each side of each module, with the inner ends of said girders secured by hinges to the foundation; constructing at least one supportive element between said girders pivotally connected to said girders; length of said supportive element equal to the erected height of the girders at said pivot connection of the supportive element; elevating said outer ends of said girders causing rotation due to gravity of said supportive element to a supportive position; and securing said supportive element on said foundation; whereby, said girders are secured in an inclined position.

4,497,155

PLUG SCREWING-IN DEVICE FOR BARRELS

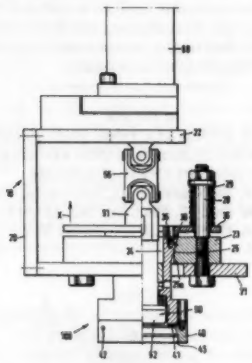
Gerhard Grosskreuz, Hamburg, and Arndt Lässig, Schenefeld bei Hamburg, both of Fed. Rep. of Germany, assignors to Grosskreuz Abfülltechnik GmbH, Schenefeld, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,567

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119286

Int. Cl.³ B65B *7/28;* **B67B** *1/06*

U.S. Cl. 53—331.5 **3 Claims**



1. A plug screwing-in device for barrels comprising a centering and screw head having a vertical central axis, said centering and screw head comprising an outer centering ring extending around the central axis and forming an inner open space, a screw head positioned within said outer centering ring within the inner open space, spring means biasing said centering ring in the downward direction and said centering ring being displaceable in the central axis direction relative to said screw head against the biasing action of said spring means, drive means for driving said screw head and extending in the central axis direction, said drive means comprises a drive mechanism located upwardly from said centering and screw head, a drive shaft comprising a first shaft portion having a first end and a second end with the first end connected to said screw head and said first shaft portion extending upwardly from said screw head, a second shaft portion having a first end and a second end with the second end connected to said drive mechanism and extending downwardly therefrom and a universal joint interconnecting the second end of said first shaft portion and the first end of said second shaft portion.

4,497,156

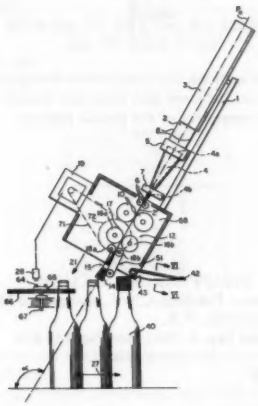
METHOD OF AND APPARATUS FOR ENVELOPING MOVING ARTICLES

Albert Scheidegger, Villeurbanne, France, assignor to ETS Scheidegger W. & Cie, Villeurbanne, France

Filed Sep. 22, 1982, Ser. No. 421,242

Int. Cl.³ B65B *13/00, 53/02*

U.S. Cl. 53—399 **18 Claims**



1. A method of fitting a series of continuously moving support elements with tubular attachments enveloping same at least in part, comprising the steps of:

(a) providing a flattened deformable sheath of indefinite length having two major sides bounded by a pair of longitudinal creases, said sides being separable from each other in a transverse direction;

(b) advancing said sheath along a guidepath descending toward a row of said moving support elements;

(c) cross-cutting the advancing sheath at an intermediate point of said guidepath into successive clippings of predetermined length;

(d) advancing each freshly cut clipping at a higher speed than said sheath along a stretch of said guidepath narrowing in an axial plane including said creases, with resulting progressive separation of said sides from each other until their spacing in said transverse direction substantially equals the distance between said creases at a leading end of the clipping; and

(e) discharging each descending clipping from said guidepath at an obtuse angle to the direction of motion of said support elements at a level at which a remote edge of the leading end thereof is met by an upright part of an oncoming support element with a cross-sectional area smaller than that of said leading end whereby the descending clipping is erected and comes to rest around said upright part.

4,497,157

PROCESS FOR FILLING PHARMACEUTICAL PRODUCTS CONTAINING PHOSPHOLIPIDES AND HIGHLY VISCOUS AT ROOM TEMPERATURE, INTO HARD CAPSULES

Manfred Dürr, Pulheim-Brauweiler, and Hans-Ulrich Fribolin, Neuss, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,525

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1980, 3022136

Int. Cl.³ B65B *1/20, 55/14*

U.S. Cl. 53—428 2 Claims

1. Process for filling pharmaceutical products which contain 10 to 98% by weight of a phospholipide and which are highly viscous at room temperature into hard gelatin capsules comprising admixing ethylalcohol to the highly viscous product in such an amount that the resulting product at room temperature or slightly elevated temperature has a viscosity just sufficient to allow to transport it by means of pumps, or a slightly lower viscosity, ejecting this resulting product with pressure and with heating prior to ejection from a filler nozzle arranged with its opening opposite to the opening of the hard capsule half to be filled, said heating being sufficient to cause evaporation of ethylalcohol from the resulting product after it is ejected from the filler nozzle, filling the hard capsule half while simultaneously evaporating admixed ethylalcohol as the resulting product is filled into the hard capsule half, and closing the filled hard capsule half with the other hard capsule half, the heating and admixed ethylalcohol content being such that substantially all of the admixed ethylalcohol evaporates between product ejection from the filler nozzle and capsule closing to produce a capsule filling which is substantially solidified and substantially devoid of admixed ethylalcohol.

4,497,158

PROCESS FOR FILLING PHARMACEUTICAL PRODUCTS HIGHLY VISCOUS AT ROOM TEMPERATURE INTO HARD CAPSULES

Manfred Dürr, Pulheim-Brauweiler, and Hans-Ulrich Fribolin, Neuss, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,627

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1980, 3022137

Int. Cl.³ B65B *1/20, 55/14*

U.S. Cl. 53—428 2 Claims

1. Process for filling pharmaceutical products which are highly viscous at room temperature into hard gelatin capsules comprising admixing a solvent volatile at normal pressure or a mixture of several such solvents to the highly viscous product in such an amount that the resulting product at room temperature or slightly elevated temperature has a viscosity just sufficient to allow the transport thereof with pressure, or a slightly lower viscosity, ejecting this resulting product with pressure and heating of the product before ejection from a filler nozzle arranged with its opening opposite to the opening of the hard capsule half to be filled, said heating being sufficient to cause evaporation of admixed solvent or solvent mixture from the resulting product after it is ejected from the filler nozzle, filling the hard capsule half while simultaneously evaporating admixed solvent or solvent mixture as the resulting product is filled into the hard capsule half, and closing the filled hard capsule half with the other hard capsule half, the heating and admixed solvent content being such that substantially all of the admixed solvent evaporates between product ejection from the filler nozzle and capsule closing to produce a capsule filling which is substantially solidified and substantially devoid of admixed solvent.

4,497,159

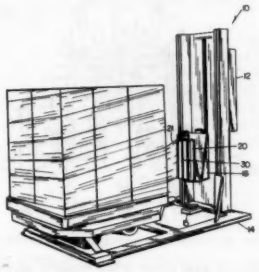
FRICTION DRIVE STRETCH WRAPPING APPARATUS

Patrick R. Lancaster, III, Louisville, Ky., assignor to Lantech, Inc., Louisville, Ky.

Filed Feb. 1, 1982, Ser. No. 344,870

Int. Cl.³ B65B *11/04, 53/00*

U.S. Cl. 53—556 15 Claims



1. An apparatus for making a unitary load using a single web of stretchable plastic material to form an overwrap holding the load under a compressive force comprising a frame, a dispenser means, said dispenser means being adapted to hold and dispense a roll of stretchable material, a means for supporting a load, a means for providing relative rotation between the load and dispenser means to pull said material off of said dispenser means, elongation means connected to said dispenser means adapted to receive stretchable material pulled from said dispenser means, said elongation means comprising a downstream roller and an upstream roller closely spaced apart and interconnected by frictionally engageable members, said rollers being driven by engagement of the moving material pulled from the dispenser means by relative rotation of the load and dispenser means so that said frictionally engageable members are driven causing the downstream roller to transport the plastic material faster than said upstream roller elongating the material, thereby causing stretched material to be placed around a load and means to selectively disengage said frictionally engageable members with a sufficient force to overcome the force of the film web against the downstream and upstream rollers pulling the rollers toward each other and force the downstream and upstream rollers apart.

4,497,160

MOWER WITH LATERAL EXTENSION WINGS

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries, Inc., Hesston, Kans.

Division of Ser. No. 489,808, Apr. 29, 1983, abandoned. This application Jun. 1, 1984, Ser. No. 616,783

Int. Cl.³ A01D *75/30, 69/08, 35/264*

U.S. Cl. 56—6 5 Claims

1. In combination with a tractor, a lawn mower comprising:

a. a main mower deck mounted on said tractor, and having a lateral span extending outwardly beyond the sides of said tractor,

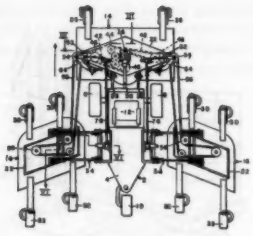
b. a pair of lateral extension mower decks mounted on said tractor respectively at opposite sides thereof, said extension decks being offset longitudinally of the tractor relative to said main deck and extending laterally outwardly beyond the respective lateral limits of said main deck,

c. horizontally rotatable blades carried by each of said mower decks and operable when driven to cut a swath of grass substantially as wide as the deck when the tractor is moved forwardly,

d. a drive train powered by said tractor and operable to drive first the blades of said main mower deck, and then,

through separate branches, the blades of the respective extension decks, said drive train consisting of a belt and pulley system, and

e. a clutch interposed in each of said drive train branches, each of said clutches and its operating means comprising a double idler pulley having two belts trained thereabout, a first belt operably connecting said idler pulley to the next



prior pulley in said drive train branch, and a second belt operably connecting said idler pulley to the next subsequent pulley of said drive train branch, and means operable to move said idler pulley selectively either in a first direction in which it tightens said first and second belts respectively, into driving relation thereto, or in a second direction wherein at least one of said belts is loosened to a non-driving relation thereto.

4,497,161

MOWER

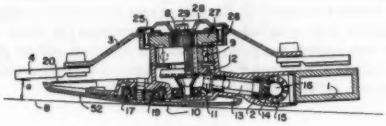
Hermanus H. Vissers, and Hendrikus C. Van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Multinorm, B.V., Nieuw-Vennep, Netherlands

Filed Jul. 6, 1982, Ser. No. 395,665

Claims priority, application Netherlands, Jul. 17, 1981, 8103411

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—13.6 **15 Claims**



1. A mowing device comprising an elongate cutter bar assembly adapted to be traveled along a swath to be cut with the cutter bar assembly extending widthwise of the swath, said assembly including at least a pair of side-by-side rotary cutter discs of inverted generally bowl-shaped configuration and a radially projecting cutter blade on each of said discs which sweep through circular paths which overlap between the cutter discs, said assembly being of narrow height and consisting of frame components which, except for portions lying within the plan view outlines of said paths, lie below said paths, said frame components including an elongate beam lying below said paths, at least two intermediate drive support housings attached to said beam and projecting forwardly therefrom, each housing including an upstanding sleeve portion forwardly of said beam and projecting upwardly through a plane containing the path of an associated cutter blade, an upstanding shaft rotatably journaled in each sleeve portion to define an axis perpendicular to said plane and means for mounting an associated cutter disc to the upper end of each upstanding shaft, intermediate drive means supported by each housing for rotating said shafts in unison, main drive means for driving said intermediate drive means and being located adjacent to and parallel to said beam, said main drive means and said intermediate drive means both being located below said paths, cover plate means lying wholly below said plane for filling in between said housings and said beam and fixed to said housings and said beam so as to form a rigid unit therewith, and with frame components also including ground engaging means for supporting the cutter bar assembly out of contact with the ground with said plane inclined forwardly and downwardly so that said paths sweep into close adjacency to the ground just forwardly of said assembly.

4,497,162

COMBINE HARVESTER

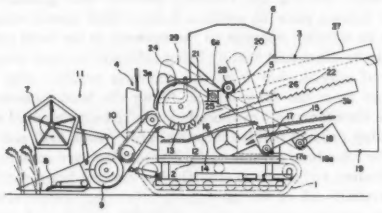
Jyutaro Eguchi; Shinzo Kashino; Tetsuichi Odahara, and Gunzo Sukenari, all of Sakai, Japan, assignors to Kubota, Ltd., Japan

Filed Jan. 18, 1983, Ser. No. 458,871

Claims priority, application Japan, Sep. 3, 1982, 57-154269

Int. Cl.³ A01F *7/04*

U.S. Cl. 56—14.6 **2 Claims**



1. A rotary-type combine harvester comprising traveling means permitting said harvester to travel over ground:

a harvester frame mounted on said traveling means;

reaping and pretreating means carried forwardly by said fame;

threshing and separating means including a threshing drum, beater means and a straw walker, said threshing and separating means mounted at a transversely offset position on said frame;

a driver's section disposed parallel to and in a side-by-side relationship with said threshing and separating means;

an engine attached directly to said frame rearwardly of said driver's section and having a transverse dimension substantially equal to a transverse dimension of said driver's section;

a grain tank disposed above said threshing and separating means and including a grain discharge pipe; wherein

a transverse dimension of said threshing and separating means and the transverse dimension of said driver's section added together substantially equal to a transverse dimension of said reaping and pretreating means; and wherein

said grain tank includes a lower part having a V-shaped section extending into a space between said better means and a straw walker in said threshing and separating means such that a lower end of said grain tank is disposed below tops of said threshing drum of said threshing and separating means and said beater means.

4,497,163

APPARATUS TO SLICE A LARGE ROUND BALE

Abraham Ogman, Peabody, Mass., assignor to The Paul Revere Corporation, Coldwater, Ohio

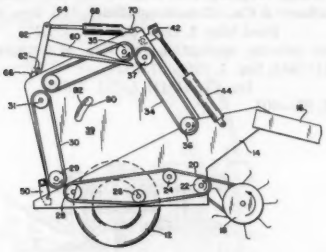
Filed Aug. 26, 1983, Ser. No. 526,756

Int. Cl.³ A01D *75/00*

U.S. Cl. 56—341 **6 Claims**

4. A slicing means for a round baler having generally a cylindrically-shaped baling chamber defined by a peripheral

member joining spaced-apart sidewalls, the invention comprising:



cutting means mounted on a sidewall and projecting into the baling chamber through a sidewall for cutting into a rotating bale thereby producing a core and an essentially ring-shaped member.

4,497,164

APPARATUS FOR MANUFACTURING AN OPTICAL FIBER CABLE WITH OPTICAL FIBERS IN GROOVES IN THE CABLE CORE

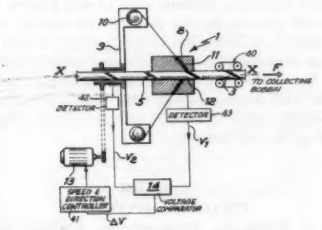
Enrico Dotti, and Beniamino Mariani, both of Milan, Italy, assignors to Societa'Cavi Pirelli S.p.A., Milan, Italy

Filed May 25, 1983, Ser. No. 497,846

Claims priority, application Italy, May 31, 1982, 21585 A/82

Int. Cl.³ G02B *5/16*; H01B *13/02*

U.S. Cl. 57—6 **9 Claims**



1. Apparatus for manufacturing a cable comprising a core having one or more helical grooves, each groove having at least one filament in each groove, said apparatus comprising a rotatable bobbin-carrier cage for carrying the filament or filaments, a rotatable rigid body mounted in spaced relation to said cage and with its axis of rotation aligned with the axis of rotation of said cage, said rigid body being rotatable around said axis with respect to said cage and said rigid body having an opening through which said core may be passed and said rigid body comprising conduits equal in number to the number of grooves for directing each fiber toward said core and into a groove as the core passes through said opening in said rigid body, means adapted to extend into said grooves and engage the walls of said grooves and connected to said rigid body for causing said rigid body to be rotated by said groove walls as said core passes through said opening in said rigid body, a first driving means for advancing said core through said opening in said rigid body, second driving means mechanically separate from said first driving means for rotating said cage, means for comparing the angular position of said cage with the angular position of said rigid body, and control means connected to said comparing means and responsive thereto and connected to said second driving means for reducing any difference between the angular position of said rigid body and the angular position of said cage.

4,497,165

METHOD AND APPARATUS FOR PREPARING AND SPLICING YARN ENDS

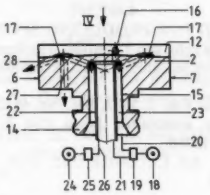
Ernst B. Völlm, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Nov. 9, 1983, Ser. No. 550,185

Claims priority, application Switzerland, Nov. 12, 1982, 6623/82

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **20 Claims**



1. A method for preparing and splicing two yarn ends, comprising the steps of:

inserting the yarn ends in a turbulence chamber;

cutting and holding the yarn ends;

preparing the yarn ends by opening the yarn ends with a first air jet produced by a preparation nozzle and produced by a pressure differential in the turbulence chamber adjacent an end thereof; and

splicing the yarn ends with a second air jet produced by a splicing nozzle separate from said preparation nozzle.

4,497,166

PROCESS AND DEVICE FOR INTERRUPTING AND STARTING THE SPINNING PROCESS AT AN OPEN-END SPINNING POSITION

Peter Artzt, Reutlingen; Heinz Müller, Metzingen; Gerhard Egbers, and Heinz Neher, both of Reutlingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

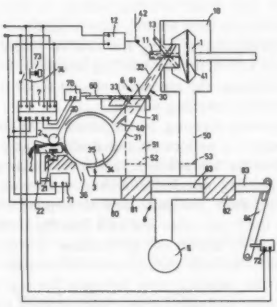
PCT No. PCT/DE82/00081, § 371 Date Dec. 27, 1982, § 102(e) Date Dec. 27, 1982, PCT Pub. No. WO82/04075, PCT Pub. Date Nov. 25, 1982

PCT Filed Dec. 27, 1982, Ser. No. 453,777

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118382

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—263 **16 Claims**



1. A process for interrupting and starting the spinning process at an open-end spinning station, in which the flow of fibers is controlled by means of a switching device being adapted to alternately assume one of two working positions, the first of which serving to give access to a duct leading to a spinning element and to block access to a fiber evacuation conduit, and the second of which serving to block access to said duct leading to said spinning element and to give access to said fiber

evacuation conduit wherein, during switching of said switching device from one of said two working positions to the other of these two working positions, the fiber flow is first taken out of the zone to be blocked, and then the zone is blocked.

4,497,167

METHOD FOR PRODUCING SPUN YARNS

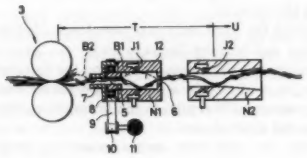
Teiji Nakahara, Kyoto, and Toshifumi Morihashi, Shiga, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 2, 1983, Ser. No. 463,277

Claims priority, application Japan, Feb. 3, 1982, 57-16662; Feb. 8, 1982, 57-19260

Int. Cl.³ D01H *5/28, 7/92*

U.S. Cl. 57—328 **5 Claims**



1. A spun yarn manufacturing method for spinning a spun yarn, comprising the steps of:

a. running a drafted staple fiber bundle from a nip point of a front roller of a spinning maching to and through a first fluid swirling nozzle;

b. twisting the drafted staple fiber bundle by the action of a fluid within the first fluid swirling nozzle;

c. running the drafted staple fiber bundle from the first fluid swirling nozzle to and through a second fluid swirling nozzle capable of swirling a fluid in a direction opposite to the direction of swirling of the fluid in said first fluid swirling nozzle on the drafted staple fiber bundler, the swirling in said first and said second fluid swirling nozzles being so controlled as to produce a greater fiber bundle revolving force within said second fluid swirling nozzle than within said first fluid swirling nozzle;

d. creating, by the greater fiber bundle revolving force of second said fluid swirling nozzle, a false-twist of the drafted staple fiber bundle, which false-twist is enabled to be communicated along the drafted staple fiber bundle through said first fluid swirling nozzle to form a twisting zone between the nip point of said front roller and said second fluid swirling nozzle;

e. concurrently forming, by the action of the first fluid swirling nozzle, a balloon in the drafted staplé fiber bundle between the nip point of said front roller and said first fluid swirling nozzle, said balloon causing fibers to be detached from the false-twisted staple fiber bundle between the front roller and said first fluid swirling nozzle;

f. winding, by action of the balloon, the detached fibers positively around the false-twisted staple fiber bundle within the twisting zone between the nip point of said front roller and said second fluid swirling nozzle; and

g. taking a spun yard out of the second fluid swirling nozzle such that the winding of the previously detached fibers around the staple fiber bundle is increased by the natural unwinding of the false-twist of the drafted staple fiber bundle, thereby forming a spun yarn having increased strength, a smooth external appearance, and a reduced fluff content.

4,497,168

METHOD AND APPARATUS FOR OPEN-END SPINNING

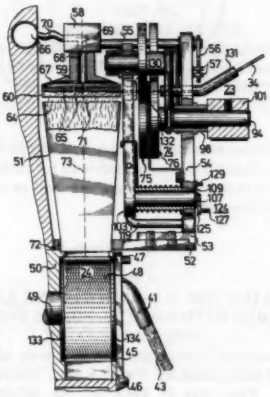
Heinz Kamp, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,244

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117443; Sep. 7, 1981, 3135337

Int. Cl.³ D01H *1/135, 7/898*

U.S. Cl. 57—401 **49 Claims**



6. Open-end spinning device, comprising a body having a stationary elongated fiber-collecting groove formed therein from which fibers are withdrawn to form a thread in a given fiber travel direction, defining ends of said groove and a bottom of said groove having at least one vented perforation formed therein, a fiber-guide canal upstream of said groove in said given fiber travel direction for discharging fibers in front of said fiber-collecting groove, a fiber opener device connected to and downstream of said fiber-guide canal, and a thread-withdrawing device downstream of one of said ends of said fiber-collecting groove.

4,497,169

CHAIN COMPONENTS

Michael J. Millington, Kidderminster, England, assignor to Parsons Controls Limited, Worcestershire, England

PCT No. PCT/GB82/00287, § 371 Date May 19, 1983, § 102(e) Date May 19, 1983, PCT Pub. No. WO83/01285, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 7, 1982, Ser. No. 503,148

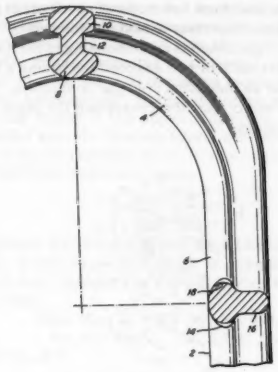
Claims priority, application United Kingdom, Oct. 7, 1981, 8130349

Int. Cl.³ F16G *13/06*

U.S. Cl. 59—84 **2 Claims**

1. A chain and cable sling device comprising an elongate main link, said elongate main link having crown portions of generally semi-circular form and, connecting the crown portions, parallel extending side portions; said crown portions each being formed with an inner circumferentially extending flange, an outer circumferentially extending flange and connecting the inner flange and the outer flange a radially extending web; and said parallel extending side portions each being formed with an inner flange and an outwardly extending web; the inner flanges of the crown portions and the inner flanges of the side portions being of a substantially identical constant cross-section; the webs of the crown portions and the outwardly extending webs of the side portions being of substantially identical constant thickness; the outer flanges of the crown portions being of substantially constant cross-section over central 120° sectors and of progressively decreasing

cross-section thickness over 30° sectors adjoining the side portions, the cross-section thickness of the outer flanges de-



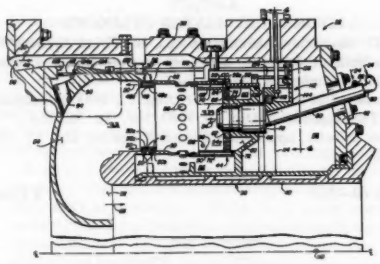
creasing smoothly to merge with the thickness of the outwardly extending webs of the side portions.

4,497,170

ACTUATION SYSTEM FOR A VARIABLE GEOMETRY COMBUSTOR

Harry A. Elliott, Phoenix, and John T. White, Gilbert, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 22, 1982, Ser. No. 400,578
Int. Cl.³ F02C *70/057*
U.S. Cl. 60—39.03 **6 Claims**



1. An actuation system for selectively varying the air inflow geometry of a gas turbine engine combustor having a liner portion which defines a combustion flow passage, said liner portion having an annular configuration and first and second air inlet openings spaced apart along an axis of said combustor, said actuation system comprising:

(a) sealing means axially movable relative to said combustor across said air inlet openings for selectively and inversely varying air inflow therethrough, said sealing means including first and second generally ring-shaped sealing members adapted to coaxially circumscribe said liner portion for slidable axial movement relative thereto;

(b) a unison ring positionable within said combustor;

(c) means for connecting said unison ring within said combustor for rotation relative thereto about said axis; and

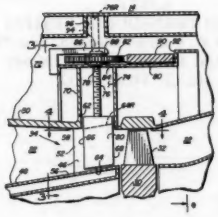
(d) linking means interconnected between said sealing means and unison ring for moving said first and second sealing members in opposite axial directions in response to rotation of said unison ring, said linking means including a circumferentially spaced series of bell crank members pivotally connected to said unison ring, means for connecting said bell crank members to said liner portion for rotation relative thereto about axes generally perpendicular to said combustor axis, a first circumferentially spaced series of actuating rods connected at their opposite ends to one of said sealing rings and to one of said bell crank members, and a second circumferentially spaced series of actuating rods connected at their opposite ends to the other of said sealing rings and to one of said bell crank members, and a control member movably extendable into said combustor to selectively rotate said unison ring.

4,497,171

COMBUSTION TURBINE ENGINE

Charles E. Corrigan, Tempe, and Paul R. Dodge, Mesa, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1981, Ser. No. 333,502
Int. Cl.³ F02C *3/00*
U.S. Cl. 60—39.75 **27 Claims**



1. A combustion turbine engine comprising a gas generator means for producing a supply of motive gas, a flow path for communicating said motive gas to a turbine section of said engine, said turbine section including a turbine wheel rotatable about an axis, and means for selectively varying the area of said flow path which is available for the flow of said motive gas, said area varying means including a multitude of spaced apart stator vanes disposed in said flow path upstream of said turbine wheel, and a multitude of members of determined transverse cross sectional shape within said flow path movably interdigitating with said stator vanes, said members being movable into and out of said flow path, said area varying means further defining a respective multitude of cavities of said determined transverse cross sectional shape matching closely with said multitude of members, said members being receivable into said cavities when moved out of said flow path during operation of said engine, and mechanical actuator means for moving said multitude of members between respective positions within said flow path and within said multitude of cavities during engine operation.

4,497,172

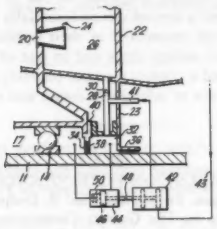
BEARING CHAMBER PRESSURIZATION SYSTEM FOR A MACHINE

Stanley Smith, Gloucestershire, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 30, 1982, Ser. No. 445,569
Claims priority, application United Kingdom, Dec. 8, 1981, 8137011
Int. Cl.³ F02K *3/06*; F02C *7/06*
U.S. Cl. 60—226.1 **9 Claims**

1. A bearing chamber pressurization system for a machine comprising a bearing chamber, a first air supply means for supplying air at a first, relatively lower pressure, to the bearing chamber for pressurizing the bearing chamber, a second air supply means which is capable of supplying air at a second, relatively higher pressure, to the bearing chamber through a

control valve, and a control means which senses the difference between the pressure in the bearing chamber and the first



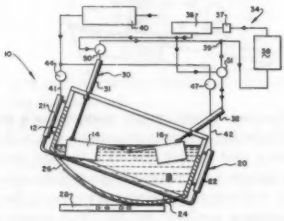
pressure and opens the control valve only when the difference in the two pressures is reduced to a pre-determined level.

4,497,173

POWER TRANSDUCER SYSTEM

James Gillilan, 1807 W. College, Sherman, Tex. 75090

Filed Apr. 4, 1984, Ser. No. 596,649
Int. Cl.³ F03B *13/00*
U.S. Cl. 60—495 **20 Claims**



1. An energy transducer system comprising:
a flotation tank having fluid disposed therein;
means supporting said flotation tank in first and second unbalanced positions;
means for rocking said tank between said first and second positions and shifting said fluid disposed therein;
first and second flotation means disposed within said tank adapted for floating upon said fluid disposed within said tank; and
means coupled to said flotation means for actuation therewith in transducing energy from shifting fluid level within said tank between said first and said second unbalanced positions.

4,497,174

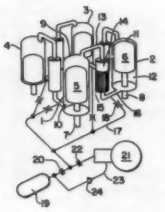
POWER CONTROL DEVICE FOR A DOUBLE-ACTING MULTI-CYLINDER HOT GAS ENGINE

Lennart Lundström, Ättehögsvägen 15, S-230 44 Vintrie, Sweden

Filed Jan. 24, 1983, Ser. No. 460,597
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—521 **3 Claims**

1. A power control device for a double-acting, multi-cylinder hot gas engine of the type in which each cylinder contains a piston dividing the interior of the cylinder into two variable volume chambers containing working gas kept at different temperature levels, the high temperature variable volume chamber in one cylinder being connected to a low temperature variable volume chamber of a neighbouring cylinder via a heater, a regenerator, a cooler, and a cold gas connection connected in series, the device comprising:

a. a gas reservoir;
b. a gas compressor;
c. a check valve connecting said gas reservoir to said gas compressor, said check valve operating to permit gas flow from said gas compressor to said gas reservoir;
d. a plurality of gas conduits corresponding to the number of said cylinders, each of said gas conduits having a first end connected to an individual cold gas connection;
e. a common interconnection connecting the other ends of said gas conduits;



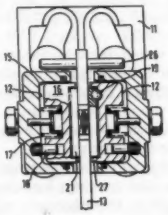
f. a first control valve connecting said common interconnection to said gas reservoir;
g. a second control valve connecting said common interconnection to said gas compressor; and
h. means restricting gas flow through each of said gas conduits for maintaining the pressure in said gas conduits substantially equal to the mean pressure of the working gas in said hot gas engine, said restricting means maintaining continuous gas flow communication between each of said gas conduits and its respective cold gas connection.

4,497,175

HYDRAULIC MASTER CYLINDER

Harry D. Temperley, Leamington Spa, and Brian Joynes, Warwick, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Continuation of Ser. No. 297,561, Aug. 31, 1981, abandoned. This application Dec. 20, 1983, Ser. No. 563,266
Claims priority, application United Kingdom, Sep. 13, 1980, 8029670
Int. Cl.³ F15B *7/00*
U.S. Cl. 60—581 **6 Claims**



1. A hydraulic master cylinder comprising:
a body;
a pair of fluid chambers within the body each of which is concentric about a common longitudinal axis;
a pair of inlet passages in the body each connecting a respective fluid chamber to a fluidic source;
a pair of outlet passages in the body affording means for connecting each fluid chamber to hydraulically operable devices;
closure valve means between each fluid chamber and the fluidic source;

a pair of fluid displacing means, one each for said fluid chambers;

a lever having a pivot axis common with the longitudinal axis of the fluid chambers and supported so as to allow for pivotal movement about the pivot axis and floating lateral movement along the pivot axis; and

expander means responsive to rotational movement of the lever to urge one fluid displacing means in one direction while simultaneously urging the other of said fluid displacing means in the opposite direction along said longitudinl axis, the floating lateral movement of the lever allowing the expander means to apply equal forces to both of said fluid displacing means.

4,497,176

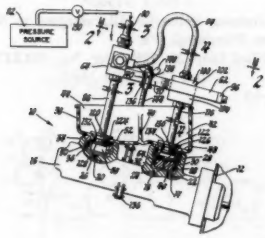
BRAKE SYSTEM PRESSURE BLEED DEVICE

Frank D. Rubin, Mesa, and Roger A. Schumacher, Chandler, both of Ariz., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1983, Ser. No. 494,508

Int. Cl.³ B60T *11/30*; F15B *7/10*

U.S. Cl. 60—5C4 **2 Claims**



1. A pressure bleed device for bleeding vehicle brake circuits having a master cylinder connected thereto, said device being quickly adapted to various master cylinder configurations having compensation ports accessible for connection of the device to the master cylinder for pressure bleeding the master cylinder and the vehicle brake circuits, which circuits form fluid flow paths, said device comprising:

an elongated base plate having a slide mounting portion and a head end, passage means in said head end including a connector passage, a first port adapted to be selectively connected to a source of brake fluid under pressure, a second port and a third port, all of said ports being in fluid communication with said connector passage, one of said second and third ports having a balance valve for controlling fluid flow therethrough from said connector passage to compensate for differences in fluid flow path restrictions;

a slide head slidably received on said slide mounting portion to be moved toward and away from said third port, said slide head having a fluid passage therethrough;

conduit means flexibly connecting said second port to said slide head fluid passage to provide continuous fluid communication therebetween and permit sliding movements of said slide head on said base plate;

a first tubular brake fluid filler stem having one end removably secured to said base plate to receive brake fluid from said third port;

a second tubular brake fluid filler stem having one end removably secured to said slide head to receive brake fluid from said slide head fluid passage;

said filler stems being adapted to have their other ends operatively sealingly mate with master cylinder ports and to transmit pressurized brake fluid to the master cylinder through the master cylinder compensation ports to pressure bleed the master cylinder and the brake circuits connected thereto;

and means on said base plate for quickly securing said device to the master cylinder in pressure bleed relation and for quickly detaching said device therefrom;

said slide head and said second brake fluid filler stem being slidable before securing action takes place so as to provide for variations in port spacing of various master cylinders to be bled sequentially by use of said device, at least one of said filler stems being interchangeable with filler stems of different lengths so as to provide for variations in relative dimensions of various master cylinders.

4,497,177

WIND GENERATING MEANS

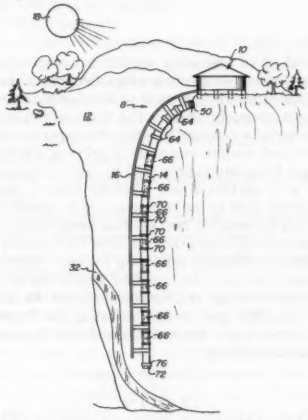
Max F. Anderson, R.R. #1, Stewardson, Ill. 62463

Continuation-in-part of Ser. No. 53,828, Jul. 2, 1979, Pat. No. 4,442,887. This application Oct. 31, 1983, Ser. No. 547,479

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641.12 **11 Claims**



1. In a system for obtaining air movement, the combination comprising,

a basin of water,

a solar energy-transmitting cover over said basin for heating water contained therein,

air inlet means for providing air from a location outside said system to a location beneath said cover above the surface of water in the basin,

surface type heat exchange means adjacent the bottom of said basin for cooling air passing therethrough by cooling water adjacent the bottom of said basin,

vertically extending air inlet passage means having an upper end terminating above the surface of the water beneath said cover in a source of air to be cooled and a lower end connected to said heat exchange means for supplying air thereto, said air inlet passage means providing communication between said heat exchange means and air source beneath said cover above the surface of the water in the basin,

an elongated air outlet passage means extending downwardly from the heat exchange means for unpumped gravity flow of cooled air downwardly from said heat exchange means through said elongated air outlet passage means, and

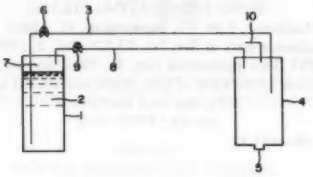
vane-driven means inside said elongated air outlet passage means for operation by downwardly flowing air therethrough.

4,497,178

METHOD OF PREVENTING ATMOSPHERE FROM ENTERING HEAT-INSULATING CONTAINER

Akira Hongo, Miki; Hideki Ueda, Nagoya; Issei Nakata, Shizuoka; Eiichi Yoshida, Shimizu; Nobuyoshi Aoki, Shimizu, and Toshimitsu Suzuki, Shimizu, all of Japan, assignors to Teisan Kabushiki Kaisha and Daiwa Can Company, Limited, both of Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,368
Claims priority, application Japan, Mar. 26, 1982, 57-47266
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—55 **3 Claims**



1. A method of operating apparatus comprising a supply tank containing low-temperature liquefied gas, a heat insulated container for temporary storage of low-temperature liquefied gas having a normally open outlet from which liquefied gas issues substantially constantly when the apparatus is in operation, and valved conduit means for supplying low-temperature liquefied gas from said supply tank to said container when the apparatus is in operation and whereby flow of liquefied gas from the supply tank to the container can be blocked to render the apparatus inoperative, said method being characterized by:

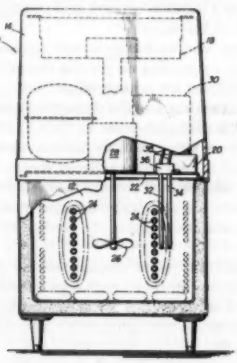
at substantially all times that the flow of liquefied gas to the container is blocked, supplying thereto vaporized gas of the same kind as said liquefied gas, at an above-atmospheric pressure and at a temperature near the boiling point of the liquefied gas, to thus maintain the interior of said container at a low temperature and free from water, carbon dioxide and air.

4,497,179

ICE BANK CONTROL SYSTEM FOR BEVERAGE DISPENSER

Robert C. Iwans, Sinsbury, Conn., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 24, 1984, Ser. No. 583,517
Int. Cl.³ F25C *1/00*
U.S. Cl. 62—59 **18 Claims**



1. A method for increasing the draw capacity of a beverage dispenser having at least one dispensing valve and having a mechanical refrigeration unit including cooling coils and an agitator for producing an ice bank in an ice-water bath, comprising the steps of:

(a) sensing when a surface of the ice bank has reached a first location and generating a first electrical signal at that time;

(b) sensing when a surface of the ice bank has reached a second location further from the cooling coils than is said first location and generating a second electrical signal at that time;

(c) maintaining said agitator off prior to receiving said first signal;

(d) operating said agitator in an on-off mode after receiving said first signal;

(e) upon receiving said second signal, operating both said agitator and said mechanical refrigeration unit in an off mode, to prevent further build-up of the ice bank; and

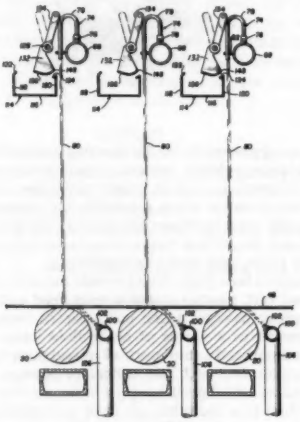
(f) upon subsequently receiving said first signal again, turning on said mechanical refrigeration unit and also initiating said on-off mode of operation of said agitator.

4,497,180

METHOD AND APPARATUS USEFUL IN COOLING HOT STRIP

Howard A. Graham, Belleville, Ill., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1984, Ser. No. 594,817
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **26 Claims**



1. In a hot strip finishing line having a runout table extending between the final mill stand and coiler and a cooling water system for cooling hot strip metal moving on the runout table, the cooling water system including a plurality of water spray bars extending transversely of and above the path of the strip moving over the runout table, a plurality of water discharge nozzles connected in each spray bar for directing cooling water downward onto the top surface of the strip, and means providing water under pressure to the respective spray bars, the improvement comprising,

an elongated water trough having water outlet means,

means mounting said trough above the runout table and in fixed generally parallel relation with one of said spray bars, said trough having an open top located below and in laterally spaced relation to the nozzles connected in said one spray bar,

movable deflector blade means operatively associated with said trough, and

actuator means selectively operable to move said deflector blade means between a first position spaced laterally from

the nozzles connected in said one spray bar and a second position extending beneath said nozzles in said one spray bar,

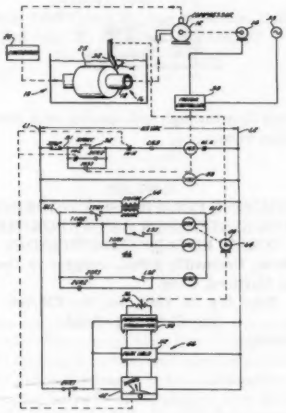
said deflector blade means in said second position deflecting water discharged from the nozzles connected in said one spray bar into said trough for discharge through said outlet means.

4,497,181

MEANS TO MEASURE, INDICATE AND REGULATE THICKNESS OF ICE LAYER IN REFRIGERATION SYSTEM

Erich J. Kocher, and John K. Kopp, both of Milwaukee, Wis., assignors to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Jun. 13, 1983, Ser. No. 503,806
Int. Cl.³ F25C *1/00*; G08B *19/02*
U.S. Cl. 62—139 **3 Claims**



1. In a refrigeration system: a compressor; a first electric motor for driving said compressor; an evaporator for receiving refrigerant from said compressor, said evaporator having a portion which is submersible in water in a tank and is susceptible to formation of a layer of ice thereon; a compressor motor controller operable to energize and de-energize said first electric motor; and means for measuring, indicating and regulating the thickness of said layer of ice and comprising:

a movable probe extendible into the water in said tank for contacting said layer of ice, said probe being reciprocably movable during one cycle of operation from a starting position, to an ice contacting position and back to said starting position; a potentiometer responsive to movement of said probe to provide a signal proportional to probe position; a second electric motor energizable to effect movement of said probe; timing means to effect energization of said second electric motor at periodic intervals of time to effect one cycle of operation of said probe for each periodic energization of said second electric motor; an indicator device operable to provide an indication of the thickness of said layer of ice; and

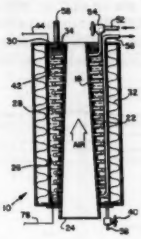
an electrical control circuit comprising a peak hold circuit to derive a peak value signal received from said potentiometer during each cycle of operation of said probe and to maintain said peak value signal for a predetermined interval of time after said each cycle of operation; and for providing a signal to operate said indicator device and to operate said compressor motor controller for said first electric motor.

4,497,182

DEHUMIDIFIER

Thomas H. Youngworth, North Quincy, Mass., assignor to Benson Engineering & Mfg., Inc., Quincy, Mass.

Filed Sep. 27, 1982, Ser. No. 424,523
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—151 **3 Claims**



1. A dehumidifier comprising:

(a) a plenum chamber;

(b) a fan for delivering warm moist air to said plenum chamber;

(c) a dehumidifier chamber mounted adjacent and communicating with said plenum chamber and provided with a condensing surface, said condensing surface being defined by an upwardly tapered passage disposed within said dehumidifier chamber;

(d) a device for supplying a refrigerant to said dehumidifier chamber;

(e) said dehumidifier chamber including means for maintaining said condensing surface below freezing;

(f) means for intermittently delivering short bursts of heat to said condensing surface;

(g) said means for maintaining said condensing surface below freezing including an enclosure, a cooling coil disposed in said enclosure and about said condensing surface, said cooling coil communicating via a pipe with said device for supplying said refrigerant thereto, a cooling liquid contained within said enclosure and surrounding said cooling coil, a surface heater arranged about said condensing surface interspersed between the windings of said cooling coil, and insulating means enveloping said enclosure, a temperature control and, a temperature sensor disposed within said enclosure and in communication with said cooling liquid, said temperature sensor being coupled to said temperature control, a solenoid valve provided in said pipe for supplying said refrigerant to said cooling coil and coupled to said temperature control.

4,497,183

COMPRESSOR AUXILIARY CONDENSER ARRANGEMENT ADAPTED TO BE MOUNTED IN A REFRIGERATOR MACHINERY COMPARTMENT

Robert B. Gelbard; Bernard J. Grimm, and William D. Irish, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 23, 1984, Ser. No. 592,830
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—295 **4 Claims**

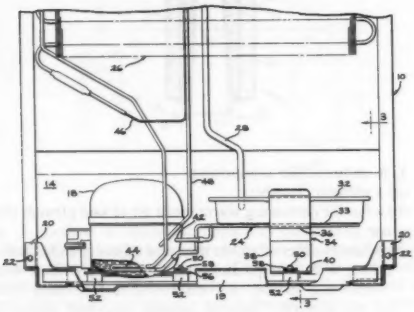
1. A household refrigerator including a cabinet having a compartment to be refrigerated in the upper portion thereof separated by an insulated partition to include a machinery compartment in the lower portions of and adjacent the rear wall of said cabinet, said compartment extending substantially between the side walls of the cabinet and having an access opening in the rear wall of said cabinet, a unitary refrigerating apparatus adapted to be arranged in said machinery compartment through said access opening, comprising:

a base member having a substantially horizontal support wall extending substantially between said side walls;

a hermetic compressor mounted on said support wall;

a condensate disposing means and oil cooling arrangement including an auxiliary condenser having a first portion located inside said compressor and a second serpentine tube portion disposed outside said hermetic compressor connected to said compressor and a condensate collection container disposed above said serpentine tube portion;

means securing said container in heat exchange relation with said serpentine tube portion whereby the high thermal conductivity and condensate evaporation rates are insured;



means supporting said condensate disposing means on said support wall including a bracket having leg portions mounted on said support wall and a platform portion spaced from said support wall being dimensioned to receive said container;

locking means being dimensioned to engage said container to securely hold said condensate disposing means relative to said platform;

an elastomer support means disposed between said compressor and said support wall, and between said leg portions and said support wall for resiliently supporting said compressor and said condensate disposing means relative to said support wall so that said compressor and oil cooling arrangement vibrate in unison.

4,497,184

AUGER-TYPE ICE MAKING APPARATUS FOR PRODUCING HIGH QUALITY ICE

Robert P. Utter, and David A. Tandeski, both of Albert Lea, Minn., assignors to King Seeley Thermos Company, Prospect Heights, Ill.

Continuation of Ser. No. 171,356, Jul. 23, 1980, abandoned. This application Nov. 9, 1982, Ser. No. 440,468

Int. Cl.³ F25C *1/14*

U.S. Cl. 62—354 **24 Claims**

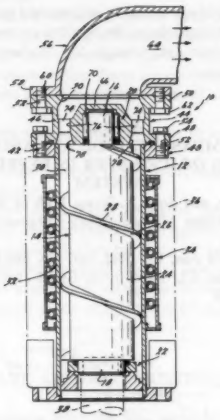
1. An apparatus for producing high quality relatively uniform size ice particles or pellets, comprising,

means for producing an ice body comprising a generally hollow cylindrically-shaped ice forming chamber,

said ice body having a generally cylindrical cross-sectional shape and having radially inner and outer sides,

ice auger means within said chamber and cooperable therewith for causing said ice body to move toward and into engagement with an ice discharge element defining a generally axially extending ice discharge opening, said opening being arranged directly above said ice body whereby a section of said body moves through said opening upon upward movement of said body,

said discharge opening having a dimension measured radially of said chamber that is greater than the radial thickness of said ice body, whereby the section of said body moving through said opening has at least one side thereof spaced away from the wall of said opening so as to define a flow passage through which unfrozen water within said



body may flow through said opening back toward said ice producing means.

4,497,185

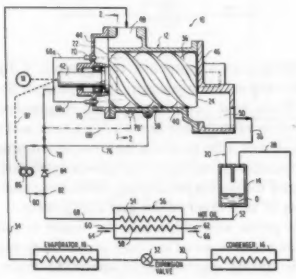
OIL ATOMIZING COMPRESSOR WORKING FLUID COOLING SYSTEM FOR GAS/VAPOR/HELICAL SCREW ROTARY COMPRESSORS

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Sep. 26, 1983, Ser. No. 536,046

Int. Cl.³ F25B *43/02*

U.S. Cl. 62—468 **6 Claims**



1. In a gas or vapor compression system including:

a helical screw compressor for compressing a gas or vapor working fluid, said compressor comprising:

a compressor casing including parallel, side-to-side intersecting bores,

end plates at the ends of said bores closing off the ends of said casing,

intermeshed helical screw rotors mounted for rotation within said bores for rotation about their axes and defining with said casing a compression chamber therebetween,

means defining a low pressure suction port and a high pressure discharge port within said compressor opening to said intermeshed helical screw rotors at opposite ends thereof,

means for feeding a low pressure working fluid suction gas or vapor to said suction port for compression within said compression chamber,

the improvement comprising:

atomizing nozzles carried by said compressor opening to said low pressure working fluid suction gas or vapor prior to compression, and

means for supplying a cooling liquid at a pressure higher than compression suction pressure for atomizing within said nozzles at a flow rate sufficient to produce a cloud type blanket of cool atomized liquid droplets uniformly dispersed within the suction gas or vapor for allowing the highest possible rate of heat transfer to occur between the cooling liquid and the working fluid during the compression process to effect the highest possible isothermal efficiency of the compressor when in a gas compression system or for compression process operation at near vapor saturation value in a vapor compression system while avoiding large hydraulic losses in the compressor.

4,497,186

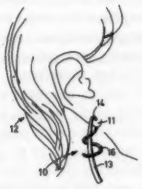
EARRING WITH PENDANT AND CIRCUMJACENT SPIRAL PORTION

Harry N. Mason, 1900 Green St., San Francisco, Calif. 94123

Filed Aug. 25, 1983, Ser. No. 526,395

Int. Cl.³ A44C 7/00

U.S. Cl. 63—13 **5 Claims**



1. An earring for pierced ears, comprising a central pendant portion adapted to hang down from the ear and which forms one end of the earring, a curved apex portion extending from the top of the pendant portion, and a spiral portion integral with and extending down from the apex portion and having at least one spiral revolution circumjacent the central pendant portion, said spiral portion comprising both a hanger wire for the earring and an ornamental portion of the earring, terminating in a lower end which forms the other end of the earring, said lower end and spiral portion being insertable through the ear, up to the apex portion, for attaching the earring to the ear.

4,497,187

METHOD OF MANUFACTURING A BURNING WICK

Yozo Yamaguchi, Nigata, Japan, assignor to Isaburo Yamaguchi, Nigata, Japan

Continuation-in-part of Ser. No. 197,343, Oct. 15, 1980, abandoned. This application Dec. 3, 1982, Ser. No. 446,581

Int. Cl.³ D04B 23/02

U.S. Cl. 66—87 **1 Claim**

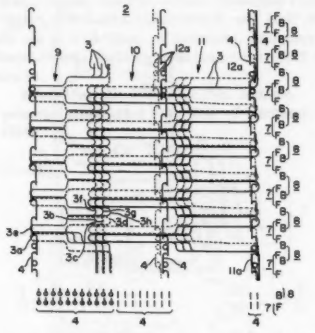
1. A method of knitting tubular burning wicks by warp knitting two set of warp yarns into a continuous two ply web of back to back, superposed single knit fabrics formed into open ended tubular wicks by a plurality of narrow seam areas in which the warp yarns of one fabric are cross interlooped with the warp yarns of the other fabric to form a single ply in the seam area, comprising

knitting a warp knit fabric having three contiguous sections;

knitting the first section of glass yarns forming at least eight wales of warp stitches and inlaying glass yarns in said wales;

knitting the second contiguous section of at least seven wales of cotton yarn and inlaying cotton weft yarns in the last-named wales;

knitting the third contiguous section with said inlaid yarns of said second section and traversing over a substantial number of needles wherein no warp stitches are formed until an edge portion; and



knitting in said edge portion at least two warp knit cotton yarns to form terminal wales at the edge of the web.

4,497,188

PROCESS AND APPARATUS FOR PEELING WIRE

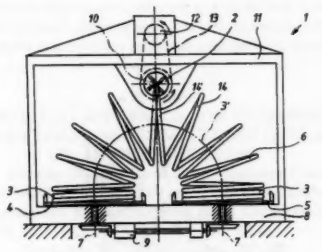
Wolfgang Lindeman, Grosse Kurfurstenstrasse 15, D-4800 Bielefeld 1, and Hans Lindeman, Zittauerstrasse 15, 4800 Bielefeld 1, both of Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,969

Claims priority, application European Pat. Off., Dec. 22, 1981, 81110696.2

Int. Cl.³ B21C 43/00

U.S. Cl. 72—40 **23 Claims**



2. An apparatus for the peeling of wire, said wire being in the shape of a loop and being peeled when in the shape of a loop, comprising:

(a) a revolving peeling head;

(b) a rotatable payout device which feeds said wire to said peeling head in the shape of a loop; and

(c) a rotatable takeup device which receives said wire from said peeling head in the form of a loop.

4,497,189

DUCT FINISHING MACHINE

Kenneth E. Larson, 224 Utah Ave. SE., Huron, S. Dak. 57350

Filed Mar. 23, 1983, Ser. No. 477,883

Int. Cl.³ B21D 39/02, 51/28

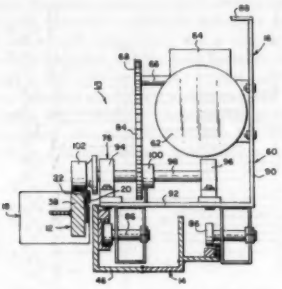
U.S. Cl. 72—51 **6 Claims**

1. A duct finishing machine which comprises:

(a) a duct holding frame that engages and holds a duct in a proper position;

(b) a power head carriage that includes means for pivotally

attaching and locking the carriage to the duct holding frame; and



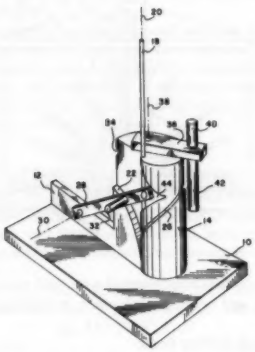
(c) a power head that moves along the power head carriage travelling an entire length of the duct for sealing a formed lock seam of the duct by rolling a flange down tight.

4,497,190

APPARATUS FOR BENDING A ROLLING MILL LAYING PIPE

Harold E. Woodrow, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Sep. 12, 1983, Ser. No. 531,234
Int. Cl.³ B21D *7/02, 11/06;* B21F *3/02*
U.S. Cl. 72—133 **14 Claims**



1. Apparatus for bending a rolling mill laying pipe, comprising:

a holder for removably retaining one end of a straight pipe section, with the axis of said pipe section being coincident with a reference axis;

first guide means defining a two dimensional first bending path curving away from said reference axis and along which a portion of the thus retained pipe section may be pre-bent and permanently deformed into conformity with said first bending path; and

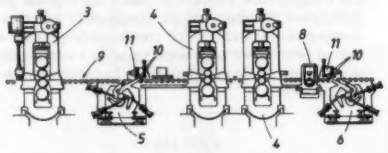
second guide means defining a three-dimensional helical second bending path curving away from said reference axis and along which the thus retained and pre-bent pipe section may be bent and permanently deformed into conformity with said second bending path.

4,497,191

PLANT AND PROCESS FOR HOT-ROLLING STRIP OR PLATE STOCK

Uwe Langer, Leonding, and Franz Brettbacher, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 23, 1983, Ser. No. 469,017
Claims priority, application Austria, Mar. 5, 1982, 869/82
Int. Cl.³ B21B *41/02*
U.S. Cl. 72—202 **1 Claim**



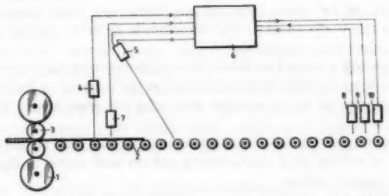
1. A hot-rolling process carried out in a hot-rolling plant comprising a forward reversing coiler, a rear reversing coiler, and a set of two reversing rolling mill finishing stands arranged in direct succession between said forward and rear reversing coilers, wherein stock to be rolled is rolled in a plurality of passes in the roll bites of said reversing stands and is coiled up on one of said coilers after at least one of said passes, wherein the improvement comprises the steps of subjecting said stock to at least one breaking-down pass in a single breaking-down rolling mill stand directly preceding said forward reversing coiler and closely spaced therefrom, maintaining said two reversing rolling mill stands inoperative by opening the roll bites thereof sufficiently while passing said stock freely therethrough during said breaking-down pass, subsequently operating all of said stands simultaneously to subject said stock to at least one combined breaking-down and finishing pass in said breaking-down stand and said reversing stands, respectively, coiling said stock in said rear coiler after at least one of said combined breaking-down and finishing passes, and subjecting said stock to at least one finishing pass in said two reversing stands after said combined breaking down and finishing pass, and coiling said stock in the other one of said coilers while maintaining said breaking down stand inoperative.

4,497,192

PROCESS FOR CROPPING THE HEAD OF SELF-LUMINOUS ROLLED MATERIAL, ESPECIALLY METAL STRIPS AND SYSTEM FOR CROPPING THE HEAD

Hans-Jürgen Reizig, Duisburg; Friedrich Meuters, Mönchen-Gladbach, and Hans-Richard Louen, Friedrichsfeld, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte, Duisburg, Fed. Rep. of Germany

Filed Dec. 20, 1982, Ser. No. 451,700
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151384
Int. Cl.³ B21B *1/00;* B23D *36/00;* B26D *5/34*
U.S. Cl. 72—203 **9 Claims**



1. In a process for cropping the head of the self-luminous

rolled material emerging from a roughing stand which comprises:

(A) measuring the width of the head of said rolled material upstream of a set of cropping shears along a measuring line which runs at right angles to the direction in which the rolled material runs;

(B) controlling the shears in accordance with measured values according to step A,

the improvement which comprises:

(C) measuring the intensity of radiation from said rolled material in the direction in which the rolled material runs in advance of a measuring line of a line scanning camera downstream thereof;

(D) adjusting the exposure time of said line scanning camera to obtain optimum exposure with respect to the edges of said rolled material;

(E) detecting the shape of said head by said line scanning camera by repeatedly generating optical images of the rolled material running below said camera;

(F) said images being generated along the measuring line which runs immediately downstream of said roughing stand;

(G) determining the distance of the cutting line from the leading edge of said head;

(H) determining the speed at which said head moves immediately upstream of said shears while;

(I) determining the position of the leading edge of said head by means of a sensor which measures transversally across the width of said rolled material;

(J) forming a control signal from:

1. the distance separating the cutting line from the leading edge of said head;
2. the speed at which the rolled material moves immediately upstream of said shears;
3. the position of the leading edge of said head; and

(K) actuating said shears in response to said control signal.

8. System for cropping the head of self-luminous rolled material, especially metal strips in a rolling train having a set of shears which are controlled by a controlling device arranged upstream the shears and including a width-measuring device for measuring the width of the rolled material, characterized in that the controlling device including a computer receives both signals from the width-measuring device designed as a line scanning camera, especially a diode-type line camera, and arranged immediately downstream of the last roughing stand of the rolling train and measuring repeatedly the width along a measuring line running transversely across the rolled material and signals from a speed-measuring device measuring the speed of the rolled material at the measuring line and signals from a barrier, especially a further line scanning camera, especially a diode-type line camera, arranged immediately upstream the shears and detecting the beginning of the head of the rolled material along a measuring line running transversely across the rolled material and signals from a further speed-measuring device measuring the speed of the rolled material upstream the shears and characterized in that the computer determines the distance separating the cutting line from the beginning of the head in accordance with the received signals for the width of the rolled material and its speed measured by a first speed-measuring device, whereby the determined distance together with the signals for the beginning of the head and its speed upstream of the shears are used to generate a control signal for the shears (10), said system further comprising a radiation intensity meter positioned in advance of the measuring line of said line scanning camera and connected to said line scanning camera to control the exposure time of said line scanning camera, arrange immediately downstream of the last roughing stand, to obtain optimum exposure with respect to the edges of said rolled material.

4,497,193

GRIPPING HEAD OF AN HYDRAULIC SHEET STRETCHER

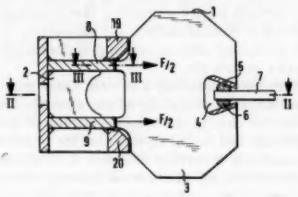
Heinrich Kutz, Neuss; Dietrich Grube, Ratingen-Tiefenbroich; Georg Eggert, Hilchenbach-Dahlbruch, and Rolf Stein, Hilchenbach, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,466

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111880

Int. Cl.³ B21D *25/04*

U.S. Cl. 72—302 **6 Claims**



1. A gripping head of an hydraulic sheet stretcher comprising a cross member, at least one flange on said cross member, a plurality of spaced laminae extending substantially perpendicular to each flange defining a gripping opening at one edge thereof for gripping the sheet and positioned at the opposite edge thereof adjacent each flange to define spaces between adjacent laminae adjacent said opposite edge thereof, a butt weld seam connecting the laminae to each flange and extending between the spaced laminae at said spaces defined between adjacent laminae adjacent said opposite edge and concave circular curved surfaces within the butt weld seam extending at least between the adjacent laminae at said defined spaces and facing said defined spaces, said curved surfaces serving to remove cracks and notches adjacent said defined spaces.

4,497,194

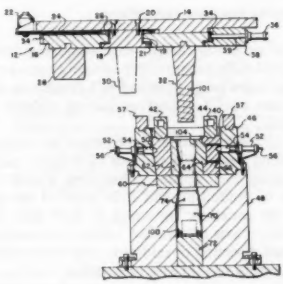
METHOD AND APPARATUS FOR PERFORMING MULTIPLE CLOSED AND SEMI-CLOSED OPERATIONS ON AN OPEN DIE PRESS

Wayne A. Martin, Wilkins Township, Allegheny County, and Justin G. Modic, Richland Township, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 14, 1982, Ser. No. 387,999

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—356 **5 Claims**



1. An apparatus for performing multiple operations on an open die press, said apparatus comprising:

a top punch assembly which includes a mounting fixture

adapted to be secured on the underside of a crosshead of said press, a horizontally elongated punch holder plate rotatably mounted about a vertical axis thereof on the underside of said fixture, a plurality of punches extending downwardly from said holder plate at spaced locations along the periphery of a circle, the center of which is located at the axis of rotation of said holder plate, and motor means connected to said holder plate for the axial rotation thereof, and

a bottom die assembly adapted to be mounted in stationary position under said crosshead of the press, for receiving respective of said punches as the crosshead is lowered, said punches being sequentially indexable into forging position with respect to said die assembly,

said bottom die assembly including a split die having a generally vertical cavity extending therethrough, said split die having a bottom surface for supporting a workpiece placed in said die and an opening in communication with the cavity in said die,

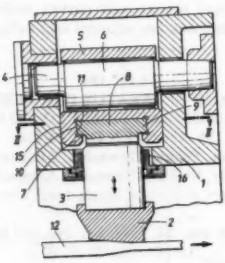
said bottom riser including a bottom upset member assembly, said assembly including a base, a member mounted on said base for closing the bottom opening of said cavity in said split die, and means on said base for selectively raising said member in a vertical direction to a stationary upper position for closing the bottom opening in said split die during an upset operation, and lowering said member, exposing the opening in said die during a punching operation.

4,497,195

SWAGING MACHINE

Bruno Kralowetz, Steyr, Austria, assignor to Firma GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Nov. 9, 1982, Ser. No. 440,338
Claims priority, application Austria, Nov. 16, 1981, 4921/81
Int. Cl.³ B21P *41/00*
U.S. Cl. 72—402 **3 Claims**



1. In a swaging machine comprising

a frame,

a plurality of generally radially extending, angularly spaced and longitudinally reciprocable swaging rams a respective one of said rams being mounted in a respective slide track of said frame, each swaging ram having radially inner and outer ends,

a plurality of ram-operating mechanisms for longitudinally reciprocating respective ones of said rams, each of said ram-operating mechanisms comprising a slide block arranged to be guided by said slide track of the respective ram and an eccentric mounted in said slide block for rotation on an axis of rotation which is transverse to the longitudinal direction of said ram, said slide track extending transversely to said axis of rotation,

the improvement residing in that each of said blocks comprises a guide rail extending transversely to said axis of rotation and to the longitudinal direction of the respective ram, and

each of said rams comprises at its radially outer end a head portion extending into said guide rail and coupled thereto for common movement in the longitudinal direction of said ram along said slide track, the head portion being in slidable engagement with, and slidable along, said guide rail and said head portion of each of said rams has in cross-section the configuration of a parallelogram having two pairs of mutually opposite sides,

one of said pairs of opposite sides constitutes said oblique surfaces, and

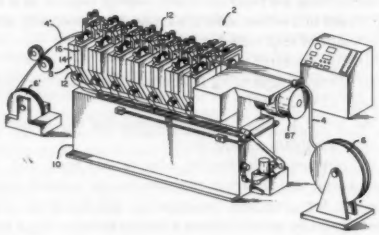
the other of said pairs of opposite sides constitutes slide faces in slidable engagement with one of said slide tracks adapted to guide the head portion along said path.

4,497,196

APPARATUS FOR PERFORMING OPERATIONS ON STRIP MATERIAL

Johannes C. W. Bakermans, Harrisburg, Pa., and Dimitry G. Grabbe, Lisbon Falls, Me., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 7, 1983, Ser. No. 464,439
Int. Cl.³ B21J *71/00, 9/18*
U.S. Cl. 72—405 **11 Claims**



1. A machine module for performing operations on strip material, the machine module comprising a strip feeder for feeding the material intermittently along a strip feed path, an operating zone on the strip feed path, first and second tool holders in the operating zone, the tool holders being aligned with each other on opposite sides of the strip feed path and being movable towards and away from the strip feed path between retracted positions, in which the tool holders are spaced from the feed path, and closed positions, in which the tool holders are substantially against strip material on the strip feed path, and actuating means for actuating the strip feeder and for moving the tool holders between their retracted and closed positions in timed sequence with the strip feeder so that the tool holders are against the strip material during dwell of the strip, the machine being characterized in that:

the actuating means comprises a continuously rotatable power shaft, first and second actuator levers, and first and second connecting links, the power shaft extending parallel to, and being spaced from, the strip feed path, the actuator levers being on opposite sides of the strip feed path, the connecting links being eccentrically coupled to the power shaft and extending to the actuator levers,

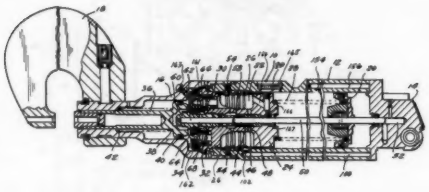
the actuating levers each having a force applying end and a pivoted end, the force applying ends being coupled to the tool holders, the pivoted ends being pivotally mounted on parallel pivotal axes which extend parallel to the main power shaft, and the conecting links being pivotally connected to the actuating levers at fixed locations intermediate the force applying and pivoted ends of the actuating levers.

4,497,197

PNEUMATIC HYDRAULIC HAND-HELD POWER UNIT

David A. Giardino, Deerfield; Joseph R. Groshans, and Kenneth A. McHenry, both of Clinton, all of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,652
Int. Cl.[3] B21J *15/34*
U.S. Cl. 72—453.17 7 Claims



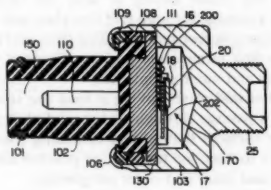
1. A pneumatic hydraulic tool having a cylindrical housing, a backhead affixed at one end of the cylindrical housing, a hydraulic cylinder affixed to the other end of the cylindrical housing, a work engaging means secured to the hydraulic cylinder, a reservoir element enclosed in the cylindrical housing, a flexible bladder arranged in the reservoir element which bladder encloses hydraulic medium and may be exposed to pressurized pneumatic medium on the exterior thereof, a piston enclosed in the hydraulic cylinder which piston may be hydraulically driven toward the work engaging means, a piston driven ram in the cylindrical housing, said backhead enclosing a throttle valve and a cycling valve, said throttle valve being movable from non-operative position to two operative positions the first of which results in exposure of the bladder to pressurized air to force hydraulic medium from the reservoir element to cause movement of the piston toward the work engaging means, the second of which results in operation of the cycling valve to direct pressurized pneumatic medium to the cylindrical housing to cause movement of the piston driven ram whereby pressurized hydraulic medium is directed to the piston in the hydraulic cylinder so that a work operation is effected.

4,497,198

KNOCKING SENSOR

Juhei Takahashi; Kenzo Miura; Shogo Asano; Kunio Sugiyama, all of Yokohama; Kiyokane Kaji, Toyota, and Jun Ohta, Aichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Continuation-in-part of Ser. No. 276,859, Jun. 24, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,853
Int. Cl.[3] G01L *23/22*
U.S. Cl. 73—35 11 Claims



1. A knocking sensor for converting engine vibrations into an electrical signal, comprising:

(a) a conductive casing having at its one end a threaded portion engageable with a screw hole of said engine, a nut-like outer portion so that said casing can be readily rotated, and a generally cylindrical bore having an open end at the other end;

(b) a connector having an insulating hollow cylinder with one end telescopically received in the bore of said casing, said connector having a pin-like conductor with a first portion received within said insulating hollow cylinder so that said first portion of said pin-like conductor is substantially parallel to said insulating hollow cylinder, said pin-like conductor having a second portion extending in a direction opposite to said first portion, said insulating hollow cylinder having an open end at its one end and a closed end at the other side, said closed end having a recess at its outside, said pin-like conductor being partially embedded in said closed end of said insulating hollow cylinder so that said second portion projects into said recess, said connector engaging with said open end of said casing at said closed end;

(c) a pickup assembly having:

a conductive base partially received in said recess of said cylinder of said connector so that said base is in contact with said casing, said base having a throughhole, the diameter of which is larger than the diameter of said second portion of said pin-like conductor;

a nonconductive substrate placed on said base;

a piezoelectric element having first and second electrodes at both sides thereof, said piezoelectric element being placed on said nonconductive substrate so that said first electrode is in contact with said nonconductive substrate; a conductive pressing plate placed on said second electrode; and at least one screw which secures said piezoelectric element interposed between said nonconductive substrate and said pressing plate onto said conductive base, said screw being screwed into a screw hole made in said base so that said second electrode of said piezoelectric element is electrically connected to said conductive casing via said pressing plate, screw, and base, said first electrode being electrically connected to said pin-like conductor via a first conductor connected between a second conductor, which is electrically connected to said first electrode, and said second portion of said pin-like conductor, which penetrates said base through said through-hole without coming into contact therewith; and

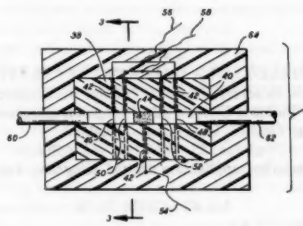
(d) means for fastening said connector to said casing.

4,497,199

LIQUID CHROMATOGRAPHY

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Division of Ser. No. 241,945, Mar. 9, 1981, Pat. No. 4,413,505. This application Feb. 10, 1983, Ser. No. 465,786
Int. Cl.[3] G01N *31/06*
U.S. Cl. 73—61.1 C 7 Claims



1. In a method of chromatographically analyzing a sample material wherein a sample is dissolved in a carrier fluid to form a mobile phase which then is passed through a chromatography column, electrochemically screening said carrier fluid so as to selectively remove electroactive materials therein prior to injecting said sample material into said carrier fluid by passing

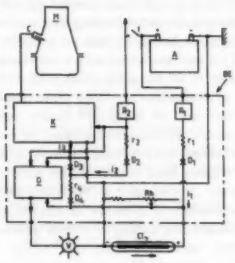
said carrier fluid through a flow cell having at least one active testing electrode, at least one reference electrode and at least one counter electrode, and applying controlled testing potentials to said active testing electrodes, a reference potential to said reference electrodes, and a counter potential to said counter electrodes.

4,497,200

METHOD AND DEVICE FOR EVALUATION AND INDICATION OF WEAR CONDITION OF MOTOR LUBRICATION

Michel Tournier, Mont Saint Aignan, France, assignor to Esso Societe Anonyme Francaise, Courbevoie, France

Filed Apr. 11, 1983, Ser. No. 484,078
Claims priority, application France, Apr. 13, 1982, 82 06331
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—64 **6 Claims**



1. A method of evaluating and indicating the wear condition of the lubrication oil in a motor comprising the steps of

integrating an electric current representing the sensed values of a temperature variable, consisting of variables used as a criterion characterizing several different fatigue conditions of the oil, said variable being then specific to the period of presence of said oil in said motor, to the working time of said motor and the time periods during which the oil being too hot or too cold wears abnormally,

and signalling the reaching of the fatigue condition of the oil based on said integrating.

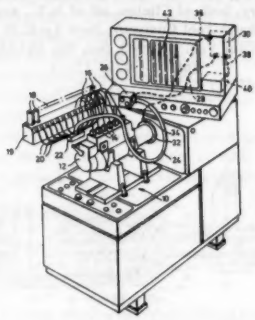
4,497,201

PHASE-ANGLE CHECKING APPARATUS

Ralph Allen, Brackley; David A. Moore, Buckingham, and Edward F. Quinton, Oxford, all of England, assignors to Leslie Hartridge Limited, Buckingham, England

Filed Jan. 25, 1983, Ser. No. 460,820
Claims priority, application United Kingdom, Feb. 1, 1982, 8202827
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—119 A **11 Claims**

1. Apparatus for detecting instants of injection of fuel or test fluid through an injector of a fuel injection pump system for an internal combustion engine, comprising (a) a part defining at least one cavity which serves, when the apparatus is in use, to receive a nozzle end of such an injector, (b) a separate adaptor positioned at least at a mouth of said cavity to provide a fit between said part and such an injector when the apparatus is in use, and (c) a pressure sensor arranged, in relation to said cavity, to detect a change in pressure transmitted through the



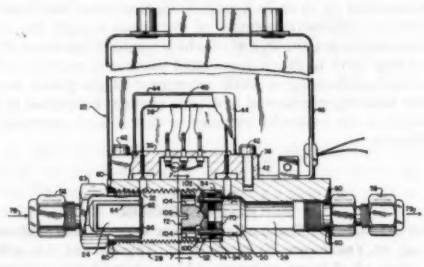
cavity interior following injection of fuel or test fluid through such an injector.

4,497,202

LAMINAR FLOWMETER

Seymour Mermelstein, Newton, Mass., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 31, 1983, Ser. No. 499,481
Int. Cl.³ G01F *5/00*; F15D *1/02*
U.S. Cl. 73—202 **16 Claims**



1. For use in a fluid flowmeter, an improved flow control member comprising in combination:

a pair of plates, each having an outer periphery and a substantially central aperture defining an inner periphery, each plate having a pair of parallel side surfaces extending between said inner and outer peripheries;

a first of said plates having at least one slotted opening forming a passage through said first plate and through said side surfaces thereof and extending from said inner periphery to a first termination position disposed intermediate said inner and outer peripheries;

the second of said plates having at least one slotted opening forming a passage through said second plate and through said side surfaces thereof and extending from said outer periphery to a second termination position disposed intermediate said inner and outer peripheries;

said plates being in contact with one another along respective facing side surfaces in registered relation wherein said central apertures are substantially aligned with one another and said first termination position is coincident with said second termination position so that said slotted openings constitute a fluid conduit extending between said inner and outer peripheries.

4,497,203

APPARATUS FOR MEASURING FLOW VELOCITY

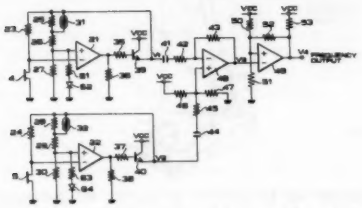
Shunichi Wada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,618

Claims priority, application Japan, Mar. 15, 1982, 57-43556; Mar. 15, 1982, 57-43558

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—204 **5 Claims**



1. An apparatus for measuring flow velocity comprising:
(a) a vortex generator disposed in a fluid to be measured;
(b) at least one heat-sensitive element disposed in the fluid for detecting the flow velocity or flow rate of the fluid in the form of change of fluid caused by said vortex generator and producing detection signals representative of a change in frequency of electric signals, said heat-sensitive element comprising a heating wire;
(c) an operational amplifier for amplifying the detection signals;
(d) a bridge circuit comprising a circuit network including said heating wire as one side thereof;
(e) the output of said operational amplifier being fed back to said bridge circuit.
(f) means including a feedback circuit for feeding the output of said operational amplifier back to said heat-sensitive element for changing the temperature of said heat-sensitive element in response to the output of said operational amplifier; and
(g) means for applying an offset voltage to at least one side of said bridge circuit.

4,497,204

LIQUID GAUGE

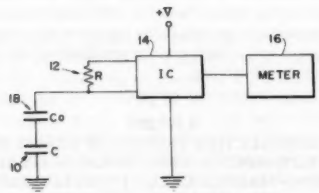
Hiroshi Kobayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jan. 8, 1982, Ser. No. 338,111

Claims priority, application Japan, Jan. 9, 1981, 56-1047

Int. Cl.³ G01F *23/00*

U.S. Cl. 73—304 C **18 Claims**



4. A liquid gauge comprising continuously oscillating oscillation means including a frequency generator **14**, a first capacitor **10** and a resistor **12** which is connected in series with said first capacitor, an indicating means **16** for visually or acoustically indicating the quantity of the liquid by processing a signal generated by said oscillation means, said first capacitor including a pair of spaced electrode plates which are submersible in a liquid the quantity of which is to be measured, which is characterized in that a second capacitor **18** is interposed in series between said first capacitor and said resistor, the capacitance of said second capacitor is determined greater than that of said first capacitor which is established by said electrode plates being substantially fully submerged in the liquid, said oscillating means is connected for continuously oscillating so long as the electrode plates are submerged in the liquid.

4,497,205

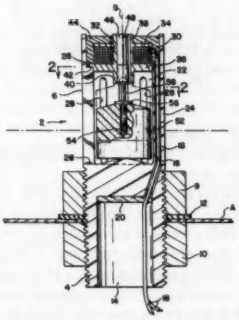
METHOD AND APPARATUS FOR AUTOMATICALLY SENSING THE LEVEL OF A LIQUID IN A RESERVOIR

Gary B. Zulauf, Pinckney, and Ben J. Charboneau, Wixom, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 17, 1982, Ser. No. 450,648

Int. Cl.³ G01F *23/12*

U.S. Cl. 73—313 **30 Claims**



1. A liquid level sensor adaptable for use in the oil reservior of an internal combustion engine comprising:
a housing adapted to be removably mounted in a bottom wall of the liquid reservior and allowing the liquid of said reservior to flow therethrough;
said housing having a top and bottom end, said bottom end being closer to said bottom wall than said top end;
a magnetic coil flux generator fixedly sercured to the top end of said housing;
a float mounted for reciprocal movement with respect to said flux generator along a predetermined path between first and second positions within said housing as a function of the level of liquid in the reservior;
a magnetic material within said housing and movable with said float and being in closer proximity to the flux generator when the float is at the first of said positions than when the float is at second of said positions, and being in sufficiently close proximity to said flux generator at said first position to significantly affect the flux generated by said flux generator as a function of the level of said generator;
monitoring means responsive to variations in the operating characteristics of said flux generator;
guide means to keep said float movable in said predetermined path, said guide means mounted coaxially with said magnetic coil flux generator, and extending from said flux generator downwardly through said housing, and
said float having a guide receiving cavity coaxial with said guide means whereby said guide means coacts with said guide receiving cavity maintains said float movably in said predetermined path.

4,497,206

GRAVIMETER

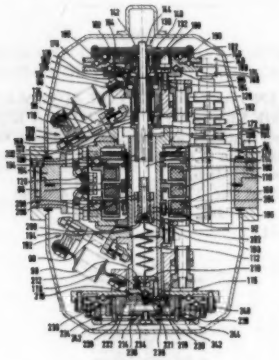
Hans Scheurenbrand, Stetten, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetchnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 474,765

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209590

Int. Cl.[3] **G01V** *7/00*

U.S. Cl. 73—382 R **20 Claims**



1. Gravimeter, comprising

(a) a measuring mass (**86**) held in a housing (**104**) for rectilinear, vertical movement,

(b) prestressed spring means (**88,90**. . .) for weakly supporting said measuring mass (**86**) in a state of equilibrium,

(c) a sensor (**94**) arranged to respond to deviations of said measuring mass (**86**) from said state of equilibrium,

(d) restoring force generator means (**92**) controlled by said sensor (**94**) and operatively connected to said measuring mass (**86**) for exerting a restoring force on said measuring mass (**86**) in accordance with a restoring force-versus-deviation characteristic, when said measuring mass (**86**) deviates from said state of equilibrium,

characterized in that

(e) said spring means comprise springs (**80,90** . . .) which

(e_1) are arranged in regular array around said measuring mass (**86**), and

(e_2) are arranged to exert pressing forces on said measuring mass (**86**) along respective lines of action (**96,98**) which are inclined with respect to the horizontal,

(f) said state of equilibrium coincides with a value of minimum, substantially zero slope of said resultant restoring force-versus-deviation characteristic of said spring means.

4,497,207

SPIN-CHECK DEVICE FOR ARROWS

Bruce M. Schaaf, 2629 Woodlawn Ave., Erie, Pa. 16510

Filed Oct. 6, 1983, Ser. No. 539,702

Int. Cl.[3] **G01M** *19/00*

U.S. Cl. 73—432 R **10 Claims**

1. A device for testing arrows for nock alignment and straightness comprising,

a base,

a staff supported on said base and extending upwardly therefrom, a shaft support on said staff spaced from said base and a motor on said base having a shaft extending upwardly therefrom and an arrow tip support on said motor shaft,

said shaft support on said staff having a v-shaped notch therein adapted to engage an arrow shaft whereby said

arrow can be rotated by said motor to rotate said arrow shaft in said notch.

4,497,208

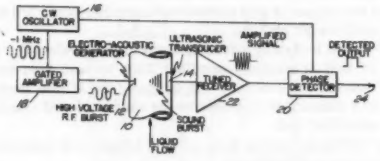
MEASUREMENT OF ELECTRO-KINETIC PROPERTIES OF A SOLUTION

Tonis Oja, Scarsdale, N.Y.; Gary L. Petersen, Kingstown, R.I., and David W. Cannon, Attleboro Falls, Mass., assignors to Matec, Inc., Warwick, R.I.

Filed Jun. 23, 1983, Ser. No. 507,111

Int. Cl.[3] **G01N** *29/00*

U.S. Cl. 73—584 **9 Claims**



1. A method of measuring electro-kinetic properties of charged particles dispersed in a liquid medium which method comprises the steps of positioning two electrodes to contact the liquid medium, energizing the electrodes with an alternating electrical potential to cause a charge separation between the surfaces of the dispersed particles and the charge layers that surround the particles in the liquid medium and thereby to generate an acoustic signal, spacing an acoustic transducer from the electrodes for detecting the acoustic signal, and measuring the amplitude of the detected signal, the amplitude of the detected signal being a function of the electro-kinetic properties of the particles present in the liquid medium, the number of particles per unit volume and the amplitude of the excitation potential on the electrodes.

4,497,209

NONDESTRUCTIVE TESTING OF STRESS IN A FERROMAGNETIC STRUCTURAL MATERIAL UTILIZING MAGNETICALLY INDUCED VELOCITY CHANGE MEASUREMENTS

Hegeon Kwun, and Cecil M. Teller, II, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jul. 12, 1983, Ser. No. 513,059

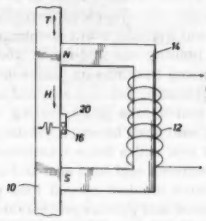
Int. Cl.[3] **G01N** *22/00*

U.S. Cl. 73—601 **16 Claims**

1. A method of determining the stress in a ferromagnetic material specimen comprising the steps of:

(a) propagating an ultrasonic wave of suitable frequency and mode in a given direction through the specimen and detecting such a propagated wave;

(b) applying a magnetic field to the specimen of a specified strength; and



(c) measuring the change in velocity of the propagated ultrasonic wave in the specimen having the applied magnetic field to obtain an indication of stress in the specimen.

4,497,210

PHASED ARRAY ULTRASONIC TESTING APPARATUS AND TESTING METHOD THEREFOR

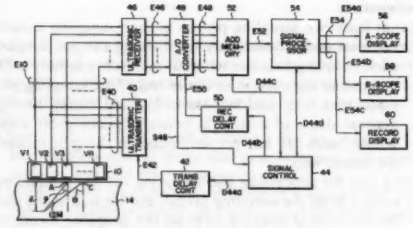
Kuniharu Uchida, Fujisawa; Satoshi Nagai, Yokohama; Ichiroh Komura, Yokohama, and Taiji Hirasawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 5, 1983, Ser. No. 510,834

Claims priority, application Japan, Jul. 5, 1982, 57-116435; Dec. 16, 1982, 57-220443

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—602 **29 Claims**



1. A phased array ultrasonic testing apparatus comprising:

(a) array probe means having a plurality of ultrasonic transducers for transmitting an ultrasonic wave into a body to be tested and for receiving an ultrasonic echo wave;

(b) transmitting means coupled to said probe means, for driving said transducers to transmit an ultrasonic main beam in a predetermined direction within said body;

(c) synthesizing means coupled to said probe means, for synthesizing reception echo signals corresponding to ultrasonic echoes received by said transducers and generating synthesized reception echo signals as a composite reception signal; and

(d) signal processing means coupled to said synthesizing means, for generating an image signal synchronous with said composite reception signal in accordance with a beam index point of said ultrasonic main beam and a steered angle thereof.

4,497,211

CIRCUIT FOR GENERATING SAWTOOTH SHAPED PULSES FOR ULTRASONIC INSTRUMENTS

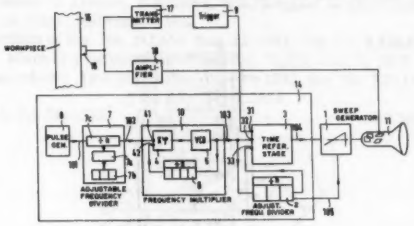
Max Rutloh, Erfstadt, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Inc., Lewistown, Pa.

Filed May 9, 1983, Ser. No. 492,748

Claims priority, application European Pat. Off., Jul. 17, 1982, 82106466.4

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—606 **7 Claims**



1. An ultrasonic test instrument for testing workpieces having a cathode ray tube for displaying ultrasonic signals and including a sweep generator for producing sawtooth signals for the time axis of said ultrasonic signals; the sweep time of said sawtooth signals being adjustable by a voltage controlled constant current source, and said sweep generator being responsive to trigger signals from a trigger generator, the improvement comprising:

a time reference stage for producing rectangularly shaped pulses, the duration of which is commensurate with the sweep time of said sawtooth signals, coupled to the input of said sweep generator;

an input of said time reference stage coupled for receiving said trigger signals from said trigger generator for causing the start of said rectangularly shaped pulses to be responsive to the receipt of said trigger signals, and

a frequency stabilized pulse generator coupled serially with a frequency transforming means to another input of said time reference stage for providing signals which, except for a constant factor, terminate said rectangularly shaped pulses.

4,497,212

FLANGELESS ELECTROMAGNETIC FLOWMETER

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Division of Ser. No. 398,809, Jul. 16, 1982, Pat. No. 4,420,982, which is a division of Ser. No. 174,609, Aug. 1, 1980, Pat. No. 4,358,963, which is a continuation-in-part of Ser. No. 75,037, Sep. 12, 1979, Pat. No. 4,253,340, which is a continuation-in-part of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,181,018, which is a division of Ser. No. 771,420, Feb. 23, 1977, Pat. No. 4,098,118.

This application Sep. 27, 1983, Ser. No. 536,275

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.³ G01F *1/58*

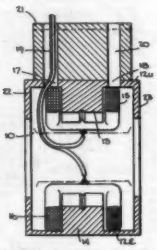
U.S. Cl. 73—861.12 **2 Claims**

1. A flangeless electromagnetic flowmeter unit interposable between the end flanges of the upstream and downstream pipes of a line conducting a fluid whose flow rate is to be metered, the end flanges of the pipes having a predetermined diameter and a circle of bolt holes, said unit comprising:

A. a cylindrical housing having a predetermined length and an external diameter which is uniform throughout its length and is smaller than that of the circle whereby when the unit is interposed between the end flanges of the pipes with the ends of the housing abutting these end flanges, the housing lies within the circle and the flanges are

bridged by bolts passing through the holes to encage the unit and subject it to a compressive force effecting a fluid seal;

B. a non-magnetic spool having substantially the same length coaxially supported within said housing and provided with end faces which abut the end flanges of the pipes to define with said housing an internal cavity, said spool forming a fluid conduit having a longitudinal flow axis which joins the upstream and downstream pipes, said spool having a strength sufficient to withstand the pressure of fluid flowing in the conduit;



C. a pair of electromagnet coils disposed at diametrically-opposed sides of said spool to create a magnetic field whose lines of flux extend across the conduit, said coils lying on a coil axis which is normal to said flow axis;

D. a pair of electrodes mounted on said spool at diametrically-opposed positions along an electrode axis perpendicular both to the coil axis and to the flow axis whereby the fluid which flows through the conduit intersects said lines of flux to induce a signal in said electrodes which is a function of flow rate; and

E. a strap of ferromagnetic material joining the electromagnetic coils to define a magnetic circuit therewith.

4,497,213

GYROSCOPIC FORCE MEASURING CELL

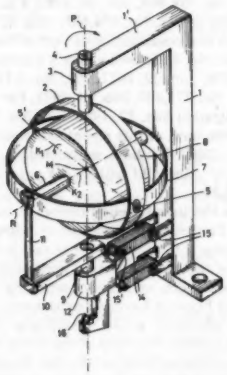
Hans W. Häfner, Aichach, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,469

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223403

Int. Cl.³ G01L *1/00, 1/26*

U.S. Cl. 73—862.38 **10 Claims**



1. A gyroscopic force measuring cell comprising:

a frame;

a gyroscope suspended force-free from said frame by an inner gimbal and an outer gimbal, said gyroscope having a rotational axis;

a pivot bearing housing connected to a non-co-precessing load pickup at which a force to be measured is present;

a guide means coaxially movable relative to the precessional axis of said gyroscope interconnected between said pivot bearing housing and said frame; and

a co-precessing transmission means interconnected between the pivot bearing housing and said inner gimbal including a shaft seated in a pivot bearing in said pivot bearing housing, said shaft having a substantially radially extending load arm and a force transmission element interconnected between said load arm and said inner gimbal,

whereby a force incident at said load pickup acting at said rotational axis of said gyroscope generates a torque producing precessional motion of said gyroscope around said precessional axis having a velocity which is proportional to said force.

4,497,214

APPARATUS FOR TAKING GASEOUS SAMPLES

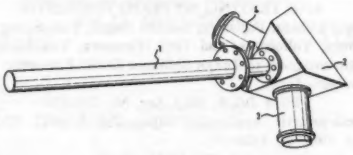
Daniel L. Ramelot, Saint-Nicolas, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium

Filed May 26, 1983, Ser. No. 498,410

Claims priority, application Belgium, May 28, 1982, 6/47658

Int. Cl.³ G01N *1/24*

U.S. Cl. 73—863.12 **12 Claims**



1. Apparatus for taking samples of gases, comprising in combination:

(a) at least two sampling probes at each sampling location,

(b) at least one sub-assembly for filtering the gas samples at each sampling location wherein each sub-assembly is fixed to a casing disposed at an outlet end of the sampling probe associated with said sub-assembly, said casing having a general shape of a straight prism of rectangular section whose bases are not perpendicular to the generatices of the prism, and

(c) a unit for processing and analysing the gas samples connected to all the sampling probes and located at the smallest practicable distance form all the sampling locations.

4,497,215

HYDRO-MECHANICAL ACTUATOR

Robert W. Gronbech, and Michael Lister, both of Sheffield, England, assignors to Davy McKee (Sheffield) Limited, Sheffield, England

Filed May 2, 1983, Ser. No. 490,323

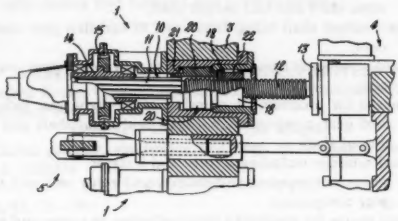
Claims priority, application United Kingdom, May 5, 1982, 8212896

Int. Cl.³ F16H *25/20;* **B21B** *31/24, 31/32*

U.S. Cl. 74—89.15 **8 Claims**

1. A hydro-mechanical actuator comprises an actuating member which has a driving end for effecting displacement of a part to be positionally adjusted, and has a threaded portion; mechanical driving means for causing rotation of the actuator member, without restricting its axial displacement; an internally threaded member in which the threaded portion of the actuating member is threaded and which is held against rotation, whereby rotation of the actuating member by the driving

means results in axial movement of the actuating member; and a hydraulic mechanism including a piston-cylinder assembly



which abuts the internal threaded member for axially displacing the internally threaded member and hence the actuating member.

4,497,216

GEAR OPERATING MECHANISM OF AN AUTOMOTIVE MANUAL TRANSMISSION

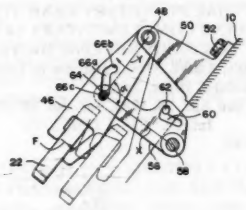
Tamio Kawamoto, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed May 18, 1982, Ser. No. 379,510

Claims priority, application Japan, May 19, 1981, 56-74099

Int. Cl.³ B60K *20/00*; G05G *5/10*

U.S. Cl. 74—475 **4 Claims**



1. In a selected gear sliding type manual transmission having a gear which is axially slidable from a neutral position where it disengages from associated gears to an operating position where it engages with the associated gears, a gear operating mechanism comprising:

a first lever pivotally movable about a first axis relative to a transmission case to move said gear between said neutral position and said operating position;

a second lever pivotally movable about a second axis relative to said transmission case, said second axis being generally parallel with said first axis;

first means for providing a cam-connection between said first lever and said second lever so that pivotal movement of said second lever about the second axis within a predetermined angular range causes pivotal movement of said first lever about said first axis and movement of said gear between said neutral and operating positions, said first means including a guide pin secured to an end of said second lever and a generally S-shaped slot formed in said first lever to slidably receive therein said guide pin, said slot having a generally straight section and first and second end sections extending outward in opposite directions from opposite ends of said main straight section, said first and second end sections thereby being inclined with respect to the main straight section; and

second means for pivotally moving said second lever about said second axis in response to movement of a speed change shift lever of the transmission,

wherein said first lever, said second lever and said first means are arranged so that when said gear assumes the operating position, and an inadvertent disengaging force is applied to urge the gear from the operating position to the neutral position, at least a part of the force is transmitted to said transmission case through said first lever, said second lever and said first means to prevent disengagement of said gear from the operating position.

4,497,217

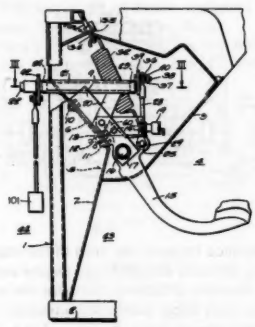
CLUTCH PEDAL OPERATING THROUGH A FORE AND AFT SHAFT IN A FIRE WALL OF A VEHICLE

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Division of Ser. No. 292,650, Aug. 13, 1981, Pat. No. 4,426,890, which is a continuation of Ser. No. 73,254, Apr. 7, 1979, abandoned. This application Aug. 29, 1983, Ser. No. 519,143

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—512 **9 Claims**



1. A foot pedal assembly for operation in a vehicle comprising, means defining an operator station including a transverse fire wall between the operator station and an engine compartment, a pendent pedal, support structure on said fire wall pivotally suspending a pivotal end of said pendent pedal on a transverse axis, a return spring normally biasing said pedal to a return position, a pivotal shaft mounted on a pivotal fore and aft axis essentially normal to the transverse axis, a bearing pivotally supporting said shaft on said fire wall and providing sound attenuation around said shaft and reducing sound transmission through said fire wall, said bearing and shaft having corresponding opposite ends disposed in said operator station and said engine compartment, respectively, a link connected to the pivotal end of said pedal and to an eccentric means on said end of said shaft disposed in said operator station to pivot said shaft in response to pivotal movement of said pedal, a motion transmitting means connected to said end of said shaft disposed in said engine compartment, said motion transmitting means being adapted for operating an actuating means.

4,497,218

COMPACT DRIVE ASSEMBLY

Franz X. Zaunberger, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,715

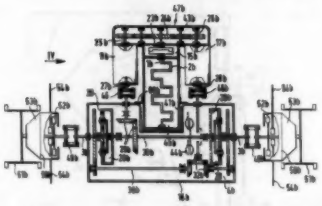
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202880

Int. Cl.³ F16H *37/06, 1/42*; B62D *11/00*

U.S. Cl. 74—682 **15 Claims**

1. A drive system for a vehicle having an engine with a drive shaft, the engine extending a distance from end to end in a direction coincident with the drive shaft axis, the drive system including a transmission for both propulsion and steering of the vehicle by control of the rotational speed of vehicle drive wheels, the transmission comprising a propulsion gear and a

steering gear, means for drivingly interconnecting the propulsion gear and the steering gear with the engine drive shaft, a pair of planetary differential gear sets, the planetary gear sets being spaced from one another, a main shaft, means for drivingly interconnecting the main shaft and one segment of each planetary gear set, means for drivingly interconnecting the propulsion gear with the main shaft, a zero shaft, means for drivingly interconnecting the steering gear with the zero shaft, means for drivingly interconnecting the zero shaft with another segment of each planetary gear set, a pair of output shafts for propulsion of the vehicle drive wheels, and means for drivingly interconnecting a further segment of each planetary gear set with one of the output shafts, the main shaft and the zero shaft having axes parallel to one another and perpendicular to the axis of the drive shaft, the propulsion gear being mounted alongside the engine and projecting in a horizontal



direction a distance between the ends of the engine, the steering gear being mounted alongside the engine and extending in a horizontal direction a distance between the ends of the engine, the main shaft being positioned adjacent one end of the engine and being spaced from the one end in a direction away from the engine, the propulsion gear and the steering gear being spaced from the main shaft in a direction toward the engine, the propulsion gear including an input shaft and an output shaft and the steering gear including an input shaft and an output shaft, the output shafts of the propulsion gear and the steering gear being parallel to the drive shaft axis, portions of the planetary gear sets projecting perpendicular to the axis of the main shaft, the drive system further including means forming a space between the projecting planetary gear set portions adjacent one side of the main shaft, the one end of the engine being positioned within the space, whereby an efficient drive system of reduced length is provided.

4,497,219

PLANETARY GEAR CONTROL SYSTEM WITH RETARDER

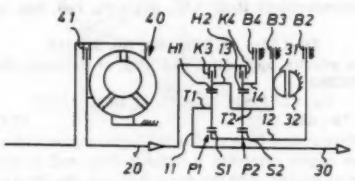
Ernst Elsner, Herbrechtingen, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,054

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134259

Int. Cl.³ F16H *3/44, 57/10*

U.S. Cl. 74—790 **9 Claims**



1. A gear system of the type having a retarder, comprising:

an input shaft;

an output shaft;

at least first, third and fourth gear components between said input shaft and said output shaft;

said output shaft being connected to said first gear component;

said input shaft being connected to said fourth gear component;

means for producing a plurality of different gear ratios in said gear components between said input shaft and said output shaft;

said retarder including a rotor and a stator;

a permanent connection between said rotor and said third gear component;

said means for producing being effective to rotate said rotor in a single direction in all forward gears;

said means for producing being effective to directly connect said third gear component to said input shaft in less than all of said plurality of different gear ratios;

gear ratios between said third gear component and said output shaft being equal and greater than 1 in at least two adjacent gear ratios; and

gear ratios between said input shaft and said output shaft being different and greater than 1 in said at least two adjacent gear ratios;

a second gear component associated with said first, third and fourth gear components, said means for producing including a brake effective to lock said fourth gear component to produce said at least two adjacent gear ratios.

4,497,220

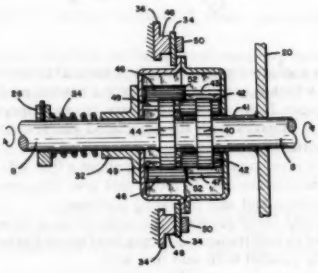
DIFFERENTIAL PLANETARY GEAR SYSTEM FOR PRODUCING COMPLEMENTARY LEVELS OF FORWARD/REVERSE DRIVE

James E. Grinde, Anoka, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 25, 1983, Ser. No. 487,970

Int. Cl.³ F16H *3/56, 3/70*

U.S. Cl. 74—792 **6 Claims**



1. A forward/reverse power transfer assembly comprising:

(a) a shaft-mounted rotatable housing operable in a forward free rotating mode or a reverse restrained mode;

(b) a power driven input gear concentrically mounted relative to said shaft;

(c) a coaxial output gear mounted to said shaft and laterally displaced from said input gear;

(d) at least one pair of partially intermeshed primary and secondary planetary gears mounted within said housing relative to said input and output gears; and

(e) mans for controllably engaging said housing between said forward and reverse modes so as to either selectively engage said primary planet gear(s) with said input and output gears and said secondary planet gear(s) with said input gear in said forward mode or engage said primary planet gear with said output gear and said secondary

planet gear with said input gear in said reverse mode, forward and reverse rotational drive thereby being imparted to said shaft relative to the rotation of said input gear during said forward and reverse modes.

4,497,221

VARIABLE GEAR TRANSMISSION SYSTEM

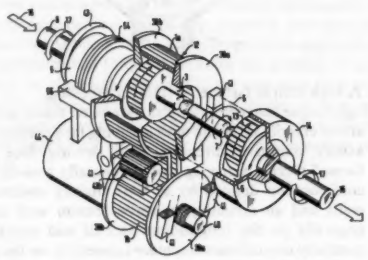
Manfred Koser, Untere Inntalstr. 17, D-8398 Pocking 2-Hartkirchen, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,643

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221236

Int. Cl.³ F16H *3/44, 57/10, 1/28*

U.S. Cl. 74—793 **11 Claims**



1. Clutchless variable tooth gearing with links to be tensioned by a double-sided tapered-disc tensioning device in a selectively full or partial circle of variable diameter ring gear engageable with at least one scanner wheel with control means being provided for controlling introduction as well as removal of links into and from said circle, each link being held at the same distance from the center of said circle.

4,497,222

CLUTCH CONTROL IN A MULTIPLE CLUTCH TYPE GEAR TRANSMISSION FOR AUTOMOBILE

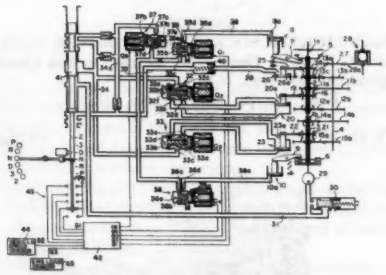
Mitsuru Nagaoka, and Mitsuo Yasuno, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 30, 1982, Ser. No. 454,570

Claims priority, application Japan, Jan. 5, 1982, 57-763

Int. Cl.³ B60K *41/18, 41/16*

U.S. Cl. 74—866 **10 Claims**



1. In a multiple clutch type transmission including a plurality of input shafts, a plurality of clutch devices for releasably and alternately connecting respective ones of said input shafts with an engine output shaft, each of said input shafts being associated with at least one set of transmission gears for connecting the input shaft associated therewith to an output element of the transmission, means for controlling said clutch devices so that selected one of said input shaft is connected through selected one of said clutch devices with the engine output shaft and through selected set of said transmission gears with the output element, a method of controlling the clutch devices in gear shift down operation, which comprises steps of disengaging the clutch device which has been in engagement for connecting the engine output shaft with one of the input shaft so that all of the clutch devices are maintained in disengaged conditions to allow engine speed to increase, and then engaging other clutch device to connect the other input shaft having the transmission gear set of lower gear stage.

4,497,223

ENGINE SPEED CONTROL SYSTEM FOR A HYDRO-MECHANICAL TRANSMISSION

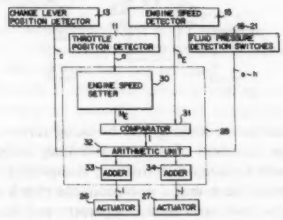
Ryoichi Maruyama; Takayoshi Nishijima; Hideaki Aida, all of Yokohama; Hideyuke Konishi, Kamakura, and Keiji Hatayama, Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,664

Claims priority, application Japan, Feb. 17, 1982, 57-22819

Int. Cl.³ B60K *41/18*

U.S. Cl. 74—866 **3 Claims**



1. An engine speed control system for a hydro-mechanical transmission of a vehicle including an engine, mechanical transmission means connected to the engine and having a plurality of speed range change-over clutches, a pair of hydraulic pumps driven by the engine, a pair of hydraulic motors each driven by the respective hydraulic pumps and operatively connected to the mechanical transmission, and a change lever for changing forward and reverse running of the vehicle, said control system comprising:

throttle position detector means for detecting throttling position of the engine and generating a first signal therefrom;

engine speed setter means responsive to the first signal and generating a second signal indicating a target engine speed;

engine speed detector means for detecting actual engine speed and generating a third signal;

comparator means for comparing the second signal with the third signal and generating a fourth signal indicating speed difference between the target and actual engine speeds;

change lever position detector means for detecting change lever positions among neutral, forward and reverse positions and generating a fifth signal;

means for selectively detecting one of the speed range change-over clutches engaged and generating a sixth signal;

arithmetic unit means for processing the fourth, fifth and sixth signals and generating a seventh signal;

a pair of actuators for controlling displacement volume of the associated hydraulic pumps; and

a pair of adder means each connected with said arithmetic unit means and said respective actuators, each of said adder means being adapted to feed said seventh signal and send out an eighth or ninth signal to said respective actua-

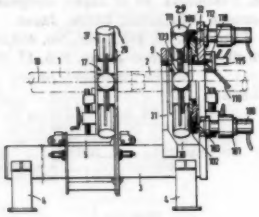
tors, said eighth and ninth signals being such signals which will gradually approximate said fourth signal to zero.

4,497,224

APPARATUS FOR MAKING AND BREAKING SCREW COUPLINGS

Reiner Jürgens, Celle-Osterloh, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 11, 1983, Ser. No. 522,123
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.34 **4 Claims**



1. Apparatus for making and breaking screw couplings between pipe members of pipe and drilling strings as well as drilling tools for deep-well drilling, comprising:

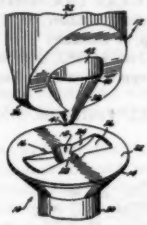
a rotatable chuck and a non-rotatable chuck which jointly define a main axis of the apparatus and are actuated by pressure fluid, each chuck adapted for receiving one of two pipe members with threaded regions at their ends adjacent to one another, one chuck being mounted in a bearing block secured at one end of a frame including an elongated supporting beam of the apparatus, the other chuck being disposed on a supporting block which is displaceable towards and away from the stationary bearing block and guided along the frame by the elongated supporting beam which is aligned parallel to the main axis of the apparatus and predetermines the path of movement for the supporting block, each chuck comprising a plurality of gripping units which are uniformly distributed round the main axis of the apparatus and act radially and each of the gripping units comprises a cylinder with a pressure-fluid-actuated piston guided therein and a non-rotatable piston rod which faces the pipe members to be gripped, and wherein the cylinders of the gripping units are constructed in the form of double-acting, separate structural units each of which comprises a grip pressure and a release pressure compartment which can be acted upon from a common pressure-fluid source via pressure-fluid lines, and of a torque producer for rotation of the rotatable chuck relative to the non-rotatable chuck during gripping engagement with the pipe members, and wherein the torque producer comprises at least one motor which is in engagment, via pinion with a rotatable toothed rim disposed on the rotatable chuck, that the grip pressure compartments of the gripping units of the rotatable chuck are connected to a pressure-retaining reservoir disposed on the chuck, there being provided on the rotatable chuck a coupling device by means of which parts of the pressure fluid lines leading to the cylinders can be separated from parts of the pressure fluid lines leading to the pressure fluid source, and which comprises non-return valves for shutting off the ends of separated pressure-fluid lines.

4,497,225

HIGH TORQUE FASTENER AND DRIVING TOOL

John Vaughn, P.O. Box 3368, Granada Hills, Calif. 91344

Filed May 6, 1983, Ser. No. 492,164
Int. Cl.³ B25B *15/00*; F16B *23/00*
U.S. Cl. 81—451 **8 Claims**



1. A high torque fastener system, comprising:

a high torque fastener having an elongated shank and a head at one end of said shank with a driving face presented in an axially outboard direction, said driving face having formed therein a driving slot of generally bow-tie shaped configuration defined by at least slightly undercut side walls and an arcuately concave bottom wall centered generally on the longitudinal axis of said shank and a generally conical recess centered generally on the driving slot with a base diameter on the order of the width of the driving slot at the opposite ends thereof and an apex disposed within said head at a depth generally twice the maximum depth of said driving slot bottom wall; and

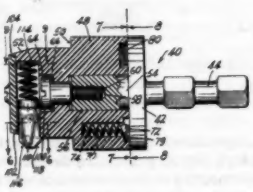
a driving tool including a tool shaft, a driving blade at one end of said tool shaft defined by a pair of blade side walls and an arcuately convex lower surface presented in an axially outboard direction and centered generally on the longitudinal axis of said shaft, said driving blade having a width at least slightly less than the central width of said fastener driving slot and said convex lower surface being formed on a radius for generally matching said driving slot bottom wall, and a generally conical blade tip formed on said driving blade in a position generally centered on said tool shaft longitudinal axis, said blade tip having a base diameter blending relatively smoothly with said blade side walls and a generally pointed end apex projecting axially beyond said blade convex lower surface a substantial distance corresponding generally with the depth of said fastener conical recess apex.

4,497,226

CIGAR LIGHTER SOCKET SHELL DRIVER TOOL

Laurence G. Horwitt, Dania, Fla., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,793
Int. Cl.³ B25B *21/00*
U.S. Cl. 81—474 **32 Claims**



1. A tool bit for assembling the socket for a cigar lighter igniting unit to the clamping shell therefor, said cigar lighter

socket having an out-turned flange for engagement with an apertured mounting plate in an automobile, comprising in combination:

(a) a driving member having means receivable in the chuck of a power tool to effect a rotary drive of said member,

(b) a plug member carried by the driving member,

(c) means providing a bearing between said members to enable them to rotate with respect to one another,

(d) said plug member having a portion receivable into said cigar lighter socket, and having a shoulder for engagement with said out-turned flange of the cigar lighter socket to limit the degree of insertion thereof into said socket,

(e) means on the plug member, engageable with the cigar lighter socket to turnably drive the latter while the cigar lighter clamping shell is being positioned thereagainst, and

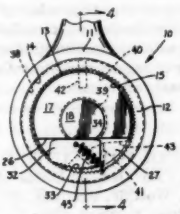
(f) cooperable drive means on said members, providing a slip clutch made operative to slip in response to application of a predetermined torque thereto for the purpose of assembling the cigar lighter socket to the clamping shell with a predetermined, desired degree of tightness so as to avoid overstressing of either the cigar lighter socket or clamping shell therefor, or undesirable distortion or breakage of the parts.

4,497,227

REVERSIBLE RATCHET MECHANISM

Jan S. Stasiek, Roswell, Ga., assignor to JS Technology, Inc., Atlanta, Ga.

Filed Jan. 27, 1983, Ser. No. 461,438
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—63.1 **11 Claims**



1. In a ratchet mechanism including a housing having a cylindrical bore therethrough defining inwardly facing ratchet teeth on the cylindrical surface of said bore and a work-turning member received for rotation within said bore, an improved ratchet switching means comprising:

a pawl defining pawl teeth for engaging said ratchet teeth of said bore, said pawl being positioned for sliding movement along a recess cut into a portion of one end of said work-turning member;

a switching member rotatably mounted outwardly of said pawl; and

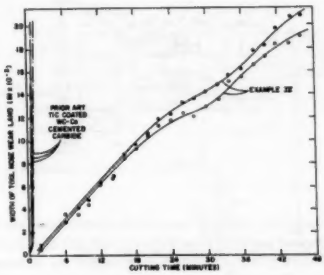
a spring extending in a radial plane mounted in compression above said pawl, one end of said spring engaging said pawl and the other end of said spring engaging said switching member at a location radially outwardly of said engagement with said pawl such that said spring extends only over the segment of said work-turning member defined by said recess in all positions of said pawl.

4,497,228

METHOD OF MACHINING CAST IRON

Vinod K. Sarin, Lexington, Mass.; Robert A. Penty, Cape Elizabeth, Me., and Sergej-Tomislav Buljan, Acton, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 353,311, Mar. 1, 1982, Pat. No. 4,433,979.
This application Jun. 21, 1983, Ser. No. 506,481
Int. Cl.³ B23B *1/00, 27/14*
U.S. Cl. 82—1 C **2 Claims**



1. A method of machining cast iron comprising

turning a cast iron work piece on a lathe at an effective speed of up to 1000 surface feet per minute;

moving a densified composite ceramic cutting tool consisting essentially of particles of hard refractory material uniformly distributed in a two phase matrix, said two phase matrix consisting essentially of a first phase and a second intergranular phase, said particles of hard refractory material being present in an amount from about 1 to about 60 volume percent of said densified composite ceramic cutting tool, said particles of hard refractory material selected from the group consisting of the carbides, nitrides, and mixtures thereof of titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum, tungsten, and combinations thereof, said particles having an average size of less than about 20 microns, said first phase consisting essentially of crystalline silicon nitride, said second intergranular phase consisting essentially of silicon nitride and a densification aid, said densification aid selected from the group consisting of yttrium oxide, hafnium oxide, the lanthanide rare earth oxides, and mixtures thereof, wherein said densification aid comprises from about 1 to about 25 weight percent of said two phase matrix, said two phase matrix containing less than 3 weight percent aluminum oxide, said densified composite ceramic article having a high density, a high abrasion resistance, a high hardness, a high fracture strength and a resistance to oxidation at temperatures greater than 1200° C. across the face of said cast iron workpiece at a rate of up to 0.020 inches per revolution; and

cutting said cast iron workpiece with said densified composite ceramic cutting tool to effect a depth of cut of up to 0.050 inches per pass.

4,497,229

ROTARY KNIFE CONTROL

Donald P. Carrington, Claremore, and Andrew D. MacKay, Tulsa, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 232,943, Feb. 9, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 421,531
Int. Cl.³ B26D *1/62, 5/20;* G06F *15/46*
U.S. Cl. 83—76 **5 Claims**

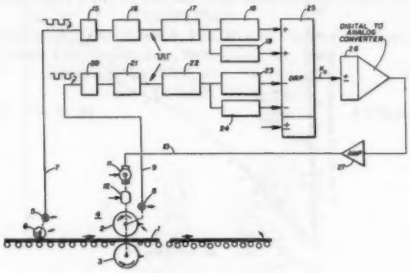
1. A system for cutting an elongated sheet of material, including

a continuous sheet of elongated material with means to advance the sheet in a horizontal plane,

a first electrical pulse generator engaging the sheet to detect the velocity/position of the sheet and establish a first train of pulses representative of the velocity/position of the sheet,

a rotating knife positioned at a point in the path traveled by the sheet to cut the sheet in predetermined lengths,

a motor connected to the knife for rotating the knife in accordance with an electrical analog signal,



a second electrical pulse generator engaging the knife to generate a second train of pulses representative of the angular velocity/position of the knife, and

means responsive to the first and second pulse trains for generating a knife motor signal to produce a knife blade rotation having a rotation velocity that is substantially sinusoidal as a function of knife rotary position while the knife is engaged with the sheet which cuts the sheet into predetermined lengths without distortion of the sheet material at the cut.

4,497,230

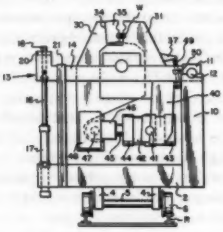
SHEAR WITH CUTTING HEIGHT ADJUSTMENT

D. Leet Shields, P.O. Box 125, Leetsdale, Pa. 15056

Filed Apr. 21, 1982, Ser. No. 370,206

Int. Cl.³ B26D *5/08*; B23D *25/04*

U.S. Cl. 83—600 **10 Claims**



1. A shear having a main frame including base members and spaced vertical members fixed to said base members and extending upwardly therefrom, a shaft extending between said vertical members, a shear frame located above said base members, said shear frame including parallel spaced members pivotally attached to said shaft, a king pin extending between and rotatably supported on said parallel spaced members of said shear frame, a master shearing arm nonrotatably supported on said king pin, a subordinate shearing arm rotatably supported on said king pin in juxtaposition to said master shearing arm, cutting means on each of said shearing arms and actuating means connecting said master shearing arm and said subordinate shearing arm to move said cutting means on said shearing arms between an open position and a closed position to cut a workpiece passing between said cutting means.

6. A shear as set forth in claim 1 or 2 including tilt means mounted on said main frame and in contact with said shear frame to pivot said shear frame about said shaft, whereby said cutting means on said shearing arms may be tilted out of the pass line of workpieces passing through said shear.

4,497,231

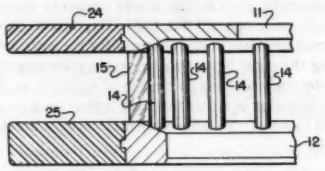
FIBER CUTTER COMPONENT

Van D. Durrett, Shelby, N.C., assignor to D. M. & E. Corporation, Shelby, N.C.

Filed Feb. 9, 1983, Ser. No. 465,165

Int. Cl.³ D01G *1/04*

U.S. Cl. 83—663 **3 Claims**



1. A reel assembly for use with a staple cutting apparatus and comprising a cutter reel having a pair of annular reel members spaced axially one from the other with each reel member defining an outwardly facing axial surface having a predetermined diameter and a circumferential mating engagement portion; a plurality of cutter blades mounted in said reel members for engaging and cutting fiber; a cover member encircling and affixed about one of the reel members and having at least two part circular segments each having an inwardly facing axial surface, and a plurality of fasteners for penetrating said segments tangentially to said inwardly facing axial surfaces for joining the segments together for encircling and engaging and gripping said outwardly facing axial surface of said reel member, one of said reel member and said cover member having a circumferential groove and the other of said reel member and said cover member having a circumferential projection, said inwardly facing axial surfaces being shaped to define a circumferential mating engagement portion for securing said cover member about said reel member.

4,497,232

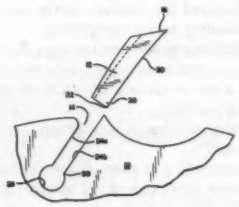
CUTTING TOOL WITH CUTTING TOOTH INSERT

Lewis A. Scott, Lake Oswego; Duane M. Gibson, Milwaukie, and Arthur J. Woodfill, Portland, all of Oreg., assignors to Omark Industries, Portland, Oreg.

Filed Apr. 29, 1983, Ser. No. 489,835

Int. Cl.³ B27B *33/12, 33/14*

U.S. Cl. 83—831 **6 Claims**



1. A cutting tool comprising; a body portion having an insert-receiving slot formed therein with front and rear sidewalls, and a cutter insert having an inserted portion seated in

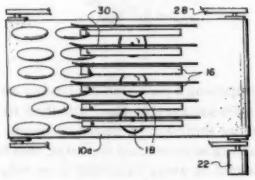
the slot with a front to rear dimension that is substantially continuous throughout its length, and a cutting tooth portion extended outwardly of the slot, the front to rear dimension of the major portion of the slot being continuous and substantially equal to the front to rear dimension of the insert, and a relief opening in the bottom of the slot, said insert being preset and formed of a resilient material, and one of said slot and insert being curved relative to the other whereby forcing the insert into the slot requires a change in the preset configuration of the insert, and whereby full seating of the insert results in a tail section of the insert being spring biased into the relief opening.

4,497,233

HOTDOG ROLL SLICER

Gregory C. Papalexis, Cambridge Way, Alpine, N.J. 07620, and Richard I. Elliott, 103 Pennfield Ave., Croton-on-Hudson, N.J. 10520

Filed Jun. 3, 1983, Ser. No. 500,843
Int. Cl.³ B26D *3/30*
U.S. Cl. 83—873 **1 Claim**



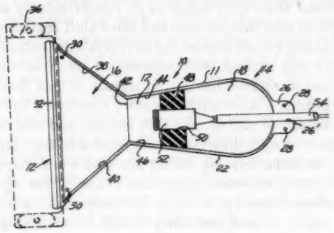
1. A roll-slicer device for slicing elongated rolls, comprising:
an endless belt having an upper horizontal run movable in a feed direction, said belt having a friction surface for frictionally engaging each elongated roll to be sliced;
drive means operatively engaged with said belt for driving said belt upper run in a horizontal feed direction;
a plurality of fixed horizontal skid plates, each having a flat, smooth, horizontal lower surface spaced away from said upper run and each extending in the feed direction, said skid plates being laterally spaced in a direction transverse to the feed direction for each of a plurality of rows of elongated rolls to be sliced, each skid plate having an upturned end in the upstream side thereof in the feed direction and a width transverse to the feed direction which is less than a width of an elongated roll to be sliced, a spacing between each skid plate and said upper run being selected to be slightly less than a height of an elongated roll to be sliced;
a plurality of slicers horizontally movable in the space between said skid plates and said upper run for slicing a roll supplied between a skid plate and said upper run, each slicer comprising a circular blade rotatably mounted in a horizontal plane and a shaft connected to said blade for rotating said blade, each slicer being mounted between two adjacent ones of said skid plates for slicing elongated rolls in two adjacent rows of rolls under said two adjacent skid plates; and
a side fence extending in said feed direction adjacent each skid plate and positioned to define a path for a row of rolls under each skid plate, at least one of said fences having a slot through which at least one of said circular blades is rotatable, each side fence having an outturned upstream end and spacing between adjacent side fences being sufficient to accept a row of rolls to be sliced, each fence having a height extending in the space between said skid plates and said upper run which is less than a total height of the space between said skid plates and upper run.

4,497,234

SOUND ATTACHMENT FOR A REED INSTRUMENT

Frank F. Strnad, 1821 Dakota, Flint, Mich. 48506

Filed Mar. 21, 1983, Ser. No. 476,980
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.04 **10 Claims**



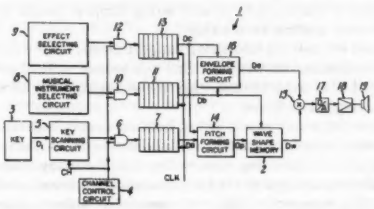
1. A sound attachment for a reed musical instrument such as a harmonica and the like comprising a housing having an open end adapted to be attached to a harmonica and a closed end, a first portion in said housing having symmetrically converging walls defining a sound funnel between said open end and an intermediate relatively narrow area along said housing, a second portion in said housing having symmetrically diverging walls and extending between said intermediate relatively narrow area and said closed end, a sound absorbing collar disposed in said second portion in said housing between said intermediate relatively narrow area and said closed end, said collar having an opening generally centrally thereof, and electronic sound pick up means held in said collar opening, said pick up means being located at a predetermined location such that substantially all sound waves emitting from said instrument are received by said pick up means and air pressure is reduced prior to said sound waves making contact with said pick up means.

4,497,235

ELECTRONIC MUSICAL INSTRUMENT

Yukichi Momoshima; Nobuyuki Nagasaka, and Mamoru Mine, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,138
Claims priority, application Japan, Feb. 9, 1982, 57-19444
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.19 **8 Claims**



1. An electronic musical instrument comprising in combination: a plurality of keys connected to a key scanning circuit; a musical instrument selecting circuit for selecting different musical instrument sounds; an effect sound selecting circuit for selecting different sound effects; a channel control circuit connected to said key scanning circuit; a first AND-gate connected to receive an output signal of said effect sound selecting circuit and an output signal of said channel controlling circuit; a second AND-gate connected to receive an output signal of

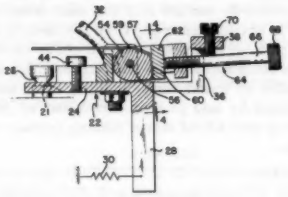
said musical instrument selecting circuit and an output of said channel control circuit; a first shift register having a plurality of channels and being connected to said first AND-gate; a second shift register having a plurality of channels and being connected to said second AND-gate; a third shift register having a plurality of channels and being connected to said third AND-gate; means for applying a clock signal to said first, second and third shift registers to synchronously actuate the channels of said first, second and third shift registers; an envelope forming circuit connected to receive the output signals of said first and second shift registers; a pitch forming circuit connected to receive the output signals of said first and third shift registers; a wave shape memory connected to receive the output signals of said second shift register and said pitch forming circuit; an operating circuit responsive to the output signals of said envelope forming circuit and said wave shape memory for enveloping the wave shape data of the output signal of said wave shape memory; a D/A converter for converting an output signal of said operating circuit to an analogue signal; and an amplifier and speaker for generating a sound from the analogue signal of said D/A converter.

4,497,236

APPARATUS FOR RESTRAINING AND FINE TUNING THE STRINGS OF A MUSICAL INSTRUMENT, PARTICULARLY GUITARS

Floyd D. Rose, 2727 NE. 145th, Seattle, Wash. 98155

Filed Mar. 15, 1982, Ser. No. 358,169
Int. Cl.³ G10D *3/04, 3/14*
U.S. Cl. 84—298 **28 Claims**



1. An apparatus for tuning a stringed musical instrument, wherein each string makes a first critical contact with the instrument at a point on the nut of the instrument and a second critical contact at a point on the bridge of the instrument, the apparatus comprising:

string support means for each string, said string support means including thereon the second critical contact point for each string;

means in the vicinity of said string support means for securely holding each string;

means for moving said string support means so as to change the distance between the first and second critical contact points of said strings, thereby changing the harmonic tuning thereof; and

means for moving said string holding means and also said string support means in such a manner as to change the tension in the string so as to fine tune the strings individually but not change the harmonic tuning thereof, while the string is securely held and essentially without changing the distance between the first and second critical contact points of the string.

16. A tremolo and tuning apparatus for use on a stringed musical instrument, wherein each string makes a first critical contact with the instrument at a point on the nut of the instrument and a second critical contact at a point on the bridge of the instrument, the apparatus comprising:

means for moving the second critical contact point of each string individually so as to change the distance between the first and second critical contact points of said each string, thereby changing the harmonic tuning thereof;

tremolo means for simultaneously changing the pitch of all the strings of the instrument; and

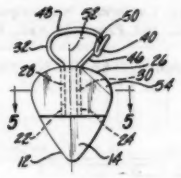
means mounted on said tremolo means, and hence movable therewith, for fine tuning each string individually by changing the tension thereof, essentially without changing the distance between the first and second critical contact points thereof.

4,497,237

GUITAR PICK

Mark A. Beall, 2965 Grouse, Wixom, Mich. 48096

Filed May 19, 1983, Ser. No. 496,132
Int. Cl.³ G10D *3/16*
U.S. Cl. 84—322 **13 Claims**



1. A pick comprising a pick element having an axis and a top edge, and a finger-engageable band attached to said pick element and forming therewith a finger receiving loop, said attachment occurring adjacent said top edge, said band including a projection extending away from said loop, wherein said pick element is rotatable about said finger when pressure is applied to said projection.

4,497,238

REVERSIBLE HIGH-HAT CYMBAL STAND

Barney A. Dasovich, 5214 W. Sunset Hwy., Spokane, Wash. 99204

Filed Apr. 2, 1984, Ser. No. 595,695
Int. Cl.³ G01D *13/00*
U.S. Cl. 84—421 **6 Claims**

1. A cymbal stand for holding first and second cymbals in face-to-face relationship, and for moving the cymbals relative to each other between spaced apart and contacting positions, comprising:

a base framework for contacting a supporting surface;

a first cymbal connection means slidably mounted to the base framework for motion between an extended position and a retracted position; the first cymbal connection means being adapted for mounting the first cymbal thereon;

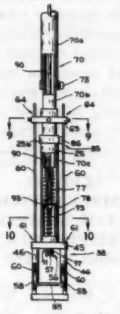
a second cymbal connection means slidably mounted to the base framework for motion approximately parallel to the first cymbal connection means, and between a contacting position and a spaced apart positions; the second cymbal connection means being adapted for mounting the second cymbal thereon;

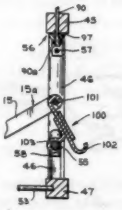
first biasing means for biasing the first cymbal connecting means into the extended position;

second biasing means for biasing the second cymbal connecting means into the contacting position;

actuator means movably connected to the base framework for actuation of the cymbal stand by a cymbal player; the actuator means being adapted for connection to either the first cymbal connection means or the second cymbal connection means; connection of the actuator means to the first cymbal connection means allowing the first cymbal means to be biased apart from the second cymbal and moved to and from the second cymbal; connection of the

actuator means to the second cymbal connection means allowing the second cymbal means to be biased into





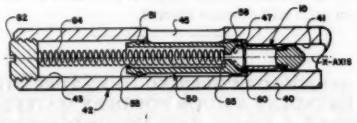
contact with the first cymbal and moved from and to the first cymbal.

4,497,239

MUZZLE EJECTING SABOT CARTRIDGE FIREARM SYSTEM

Hugh R. Curry, P.O. Box 2274, El Cajon, Calif. 92021

Filed Oct. 5, 1981, Ser. No. 308,420
Int. Cl.³ F41D *11/12;* F42B *5/02*
U.S. Cl. 89—198 **7 Claims**



1. A muzzle ejecting sabot cartridge firearm system comprising:

an elongated projectile launching barrel having an axially extending bore and having a muzzle end and a rear end;

an action mechanism afixed to the rear end of the barrel;

a gas expansion chamber defined by the reaction mechanism and in communication with the barrel bore;

a tubular cartridge case closed at a base end;

an annular rim formed by the cartridge case adjacent the base end, the diameter of the rim being suitably larger than the diameter of the barrel bore;

an annular groove internal to the cartridge case and defined by the annular case rim;

a projectile detachably fixed to a front of the cartridge case, the cartridge case and the projectile being disposed projectile first in the barrel bore such that the rim of the case abuts the rear end of the barrel, the case rim preventing further intrusion of the case into the barrel;

a closed chamber defined by the cartridge case and the projectile;

an expanding gas propellant charge disposed within the cartridge chamber; and

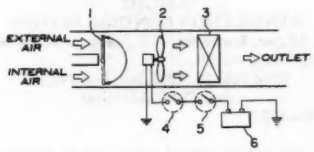
a primer means disposed within the annular groove for igniting the propellant charge, said primer is adapted to be ignited by physical shock from a striking means comprising a moveable rod with a striking face comprising a peripheral rim surrounding a centrally located relieved portion, the striking face rim being adapted to strike the annular rim portion of the cartridge case, the relieved portion being adapted to provide enough space for the base end of the cartridge case to rupture and be reformed by the expanding gases of the ignited propellant charge such that the case rim no longer prevents passage of the cases through the barrel, the resultant pressure in the gas expansion chamber being sufficient to propel the case through the barrel and out the muzzle.

4,497,240

TEMPERATURE CONTROL DEVICE FOR A VEHICLE CABIN

Hideaki Nagatomo; Mitsuo Yasuda, and Seiji Kubo, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki ...isha, Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,889
Claims priority, application Japan, Aug. 20, 1982, 57-144221
Int. Cl.³ B60H *1/00;* F24F *7/00*
U.S. Cl. 98—2.01 **5 Claims**



1. A temperature control device for controlling the temperature of a vehicle cabin by regulating the operation of an existing vehicular air flow system independent of the operation of the ignition system of said vehicle wherein said existing vehicular air flow system has a duct for connecting the vehicle cabin with external atmosphere, a damper provided within said duct for shutting off flow of air within said duct, a fan to produce air flow within said duct and a fan motor to actuate and drive said fan, said temperature control device comprising;

drive means for driving said damper to open and close;

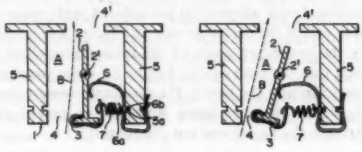
detecting means to detect temperature changes within said vehicle cabin; and

a power source separately provided from said vehicle power source for supplying power to said fan motor whereby when said detecting means detects a temperature in said vehicle cabin which is higher than a predetermined temperature said detecting means outputs a signal to said separate power source and said separate power source supplies electric power to said fan motor to turn on said fan and also supplies electric power to said drive means for driving said damper and thereby inhibit the rise in temperature within said vehicle cabin.

4,497,241
DEVICE FOR AUTOMATICALLY ADJUSTING ANGLE OF LOUVER

Ichizo Ohkata, Yokohama, Japan, assignor to Katou Hatsujo Kaisha Ltd., Yokohama, Japan

Filed Apr. 25, 1984, Ser. No. 603,752
Claims priority, application Japan, Dec. 7, 1983, 58-189105[U]
Int. Cl.³ F24F 7/00
U.S. Cl. 98—40.25 8 Claims



1. A device for automatically adjusting the angle of a louver comprising:

a louver pivotally secured to a body in an air passage formed between side walls for altering the diffusing direction of diffused air,

a shape memory alloy spring for urging rotary force to said louver in one direction for fittings mounted at the side walls of the body and said louver, as required, and

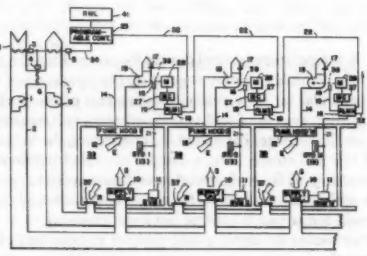
a bias spring for urging rotary force reverse to said louver in such a manner that said shape memory alloy spring and said bias spring are balanced in the air passage,

wherein the balanced state is collapsed by said shape memory alloy spring deformed when chilled air is fed to the passage to tiltably incline said louver, siad louver can be automatically controlled by sensing the temperature of the diffused air by said shape memory alloy spring and said bias spring.

4,497,242
VENTILATION CONTROL SYSTEM

Robert C. Moyer, Rochester, N.Y., assignor to Barber-Colman Company, Rockford, Ill.

Filed Feb. 11, 1982, Ser. No. 347,752
Int. Cl.³ F23J 11/00
U.S. Cl. 98—115.3 7 Claims

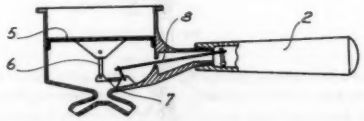


1. A ventilation control system for a room equipped with a fume hood which enables the exhaust air flow through said hood to be reduced with safety which comprises a motor operated exhaust fan associated with said hood, means for circulating ventilating air through said room, means for selecting different speeds, including stop, of said exhaust fan, means for indicating with human recognizable indication the air flow through said hood produced by said exhaust fan, means responsive to the speed of rotation of said fan and said selecting means for operating said indicating means, said speed responsive means comprising means for detecting the rotations of a shaft drivingly connecting said motor and said exhaust fan, means for providing a control signal representing the rate of said rotations, said selecting means comprising switch means for selecting stop, faster and slow exhaust fan speeds, and said means responsive to the speed of rotation and said selecting means comprising programmable means for providing a plurality of outputs corresponding respectively to said stop, faster and slower speeds, and means for operating said indicating means in response to said outputs and to the rate of shaft rotations signal for indicating a danger condition when stop is selected and when faster and slower speeds are not achieved.

4,497,243
PERCOLATOR ASSEMBLY SUPPORTING STRUCTURE, PARTICULARLY FOR DOMESTIC AUTOMATIC COFFEE PERCOLATORS

Alfredo Cavalli, Via Galilei, 9, 20060 Pessano Con Bornago (Milano), Italy

Filed Jun. 1, 1983, Ser. No. 499,826
Claims priority, application Italy, Jun. 11, 1982, 21827 A/82
Int. Cl.³ A47J 31/14
U.S. Cl. 99—323 2 Claims



1. A percolator assembly supporting structure particularly for domestic automatic coffee percolators, comprising a powder containing body effective to be coupled to the water dispensing unit and provided, at the bottom thereof, with coffee metering spouts, in said containing body a coffee powder holding grille being slidably housed, characterized in that said structure further comprises driving means which may be operated from the outside of said structure for moving said holding grille to at least a first position therein it defines in said body a first space effective to receive a coffee powder amount sufficient for preparing two coffee cups, a second position therein it defines in said body a second space effective to receive a coffee powder amount sufficient for preparing a single coffee cup, as well as a third position position therein said holding grill is substantially located flush with the upper edge of said body, locking means being moreover provided for locking said grille in each said position thereof.

4,497,244
DEVICE FOR COVERING FOODSTUFF WITH GRANULAR AND/OR POWDERY MATERIAL

Wilhelmus F. A. Koppens, Bakel, Netherlands, assignor to Koppens Machinefabriek B.V., Netherlands

Filed Jan. 21, 1983, Ser. No. 459,852
Int. Cl.³ B05C 19/00
U.S. Cl. 99—494 7 Claims

1. A device for covering foodstuff with bread-crumbs or the like including granular and powdery material, said device comprising:

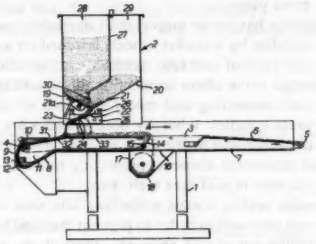
a support frame;

a bunker means mounted on said support frame for containing a supply of the bread-crumbs and including an outlet for the bread-crumbs;

conveyor means for displacing the foodstuff along a path below the outlet of said bunker means;

a sieve plate means for mounting between the outlet and the conveyor means, the sieve plate means defining a plurality of spaced-apart substantially parallel elongate openings lying one behind the other and extending transversely of the direction of displacement of the foodstuff on the conveyor means; and

vibration mounting means for vibrating the sieve plate means independently of said bunker means, in a position downwardly inclined away from the outlet of the bunker means in a direction opposed to the direction of displacement of the foodstuff on the conveyor means to supply the bread-crumbs to the conveyor means whereby substantially larger granular bread-crumbs are supplied to foodstuff on the conveyor means followed by powdery material for the effective coating of the foodstuff.



4,497,245

PINEAPPLE CUTTER

Kashichi Mori, Iwatsuki, Japan, assignor to Kowa Shoji Kabushiki Kaisha, Tokyo, Japan

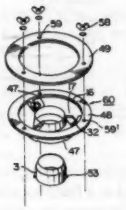
Filed Jul. 14, 1983, Ser. No. 513,594

Claims priority, application Japan, May 26, 1983, 58-78150[U]

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.³ A23N *4/00, 4/20, 7/08*

U.S. Cl. 99—542 **7 Claims**



1. A pineapple cutter comprising:

a pineapple cutter frame having an upper wall;

a cylindrical body rotatably mounted on said cutter frame and having a side peripheral wall and a base disc, said peripheral wall being formed with a slant groove which is provided obliquely in a vertical direction in said peripheral wall;

a smaller-diameter tubular cutter mounted on said base disc for cutting the core of a pineapple;

a larger-diameter tubular cutter situated concentrically around said smaller-diameter tubular cutter for peeling a pineapple, said larger-diameter tubular cutter being engaged with said cylindrical body so that said larger-diameter tubular cutter rotates with said body, is positioned at about the same height as said smaller-diameter tubular cutter, and is detachable from said cylindrical body by upward displacement of said larger-diameter tubular cutter;

a loading table being vertically movable and loosely inserted between said larger-diameter tubular cutter and said smaller-diameter tubular cutter for receiving a pineapple;

a horizontal rod connected to said loading table and passing through said slant groove, said horizontal rod being used to provide a vertical movement to said loading table and rotational movement to said cylindrical body, larger-diameter tubular cutter and smaller-diameter tubular cutter; and

an equipping frame body removably mounted on the upper wall of said cutter frame at a concentric position with said cylindrical body and including a cylindrical guide body dimensioned for frictional engagement with said larger-diameter tubular cutter, an annular frame body for engaging said upper wall of said cutter frame and having a circular window having an inside diameter larger than the outside diameter of the largest pineapple to be cut, and a plurality of fitting frames joining said guide body and said annular frame body, said equipping frame body being coupled to the upper wall of said pineapple cutter frame to prevent relative rotational movement therebetween, whereby when said equipping frame body is detached from the upper wall of said pineapple cutter frame in the upward direction, said larger-diameter tubular cutter will also detach upwardly from said cylindrical body by the frictional engagement with said cylindrical guide body.

4,497,246

METHOD OF AND ARRANGEMENT FOR PROCESSING LENGTHS OF MATERIAL

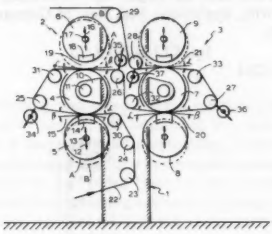
Josef Pav, Krefeld, and Heinz Jaegers, Duisburg, both of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Apr. 28, 1983, Ser. No. 489,548

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216182

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—35 **64 Claims**



1. A method of processing lengths of material comprising the steps of conveying said material along a predetermined path; maintaining a first roller located at the region of a first portion of said path in a first operative position for a predetermined interval to thereby effect processing of said material in said first portion of said path, said first roller being movable from said first operative position to a first inoperative position; rotating said first roller at a predetermined peripheral speed in the course of said maintaining step; maintaining a second roller located in the region of a second portion of said path in a second inoperative position during said predetermined interval, said second roller being movable to a second operative position to thereby effect processing of said material in said second portion of said path; rotating said second roller at a peripheral speed significantly lower than said predetermined speed while said second roller is maintained in said second inoperative position; moving said second roller to said second operative position without interrupting the conveying step; accelerating said second roller to said predetermined speed not later than when said second roller reaches said second operative position; moving said first roller to said first inoperative position without interrupting the conveying step to thereby permit said first roller to be manipulated during performance of the conveying step; and maintaining said second roller in

said second operative position for an interval following movement of said first roller to said first inoperative position.

18. An arrangement for processing lengths of material, comprising means defining a predetermined path for the material and including processing roller means; a first roller movable between a first inoperative position and a first operative position in which said first roller cooperates with said roller means to process the material; a second roller movable between a second inoperative position and a second operative position in which said second roller cooperates with said roller means to process the material, said processing roller means and said first and second rollers respectively defining first and second gaps, said defining means further including a first guide element immediately upstream of each of said gaps and a second guide element immediately downstream of each of said gaps, said first guide elements having substantially the same positions relative to the respective gaps and said second guide elements having substantially the same positions relative to the respective gaps; moving means for moving said first and second rollers between the respective operative and inoperative positions; and drive means for rotating said roller means and said rollers, said drive means being designed to rotate said roller means and said rollers at substantially a predetermined peripheral speed for processing, and said drive means including a drive mechanism for rotating said second roller at another peripheral speed lower than said predetermined speed when said second roller is in said second inoperative position.

4,497,247
BALING PRESS WITH VERTICAL OPERATING DIRECTION

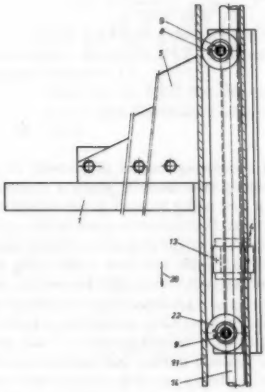
Albert Goldhammer, Überlingen, Fed. Rep. of Germany, assignor to Firma Feinwerktechnik Schleicher & Co., Markdoff, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,232

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112721

Int. Cl.³ B30B *1/18*

U.S. Cl. 100—214 **7 Claims**



1. An improved baling press with a vertical operating direction comprising:

a press case having side walls, a front wall and a rear wall which is substantially closed but provided with two vertical slots:

a carriage means including rollers and guide rails;

a press plate movable up and down in said press case; and two transverse elements connected at the upper side of said press plate and secured to said carriage means, which is vertically guided by said rollers cooperating with said guide rails mounted behind said rear wall;

spindle nuts secured to said carriage means;

two vertical press spindles rotatably mounted behind said rear wall of said press case, spaced from each other in a direction parallel to said rear wall and cooperating with said spindle nuts to move said carriage means and said press plate;

a motor having an output shaft driveably connected to said spindles by sprocket wheels fastened on said output shaft and each of said two vertical press spindles;

a single drive chain connecting all of said sprocket wheels and connecting said motor and both of said two vertical press spindles, whereby both spindles are driven in synchronism and in the same rotating direction;

said transverse elements projecting through said two vertical slots in said rear wall; and

flexible sealing means projecting into said vertical slots of said rear wall in order to prevent material to be baled from falling out of said press case through the slots.

4,497,248
THERMAL ENGRAVING PRESSES

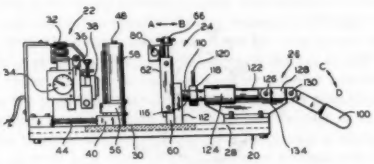
James C. Kanzelberger, Riverside, Ill., and William J. Deau, Manitowoc, Wis., assignors to Contemporary Inc., Chicago, Ill.

Continuation of Ser. No. 373, 180, Jun. 29, 1982, abandoned, which is a continuation of Ser. No. 297,758, Aug. 31, 1981, abandoned.

This application Dec. 12, 1983, Ser. No. 559,852

Int. Cl.³ B44B *5/00*

U.S. Cl. 104—27 **13 Claims**

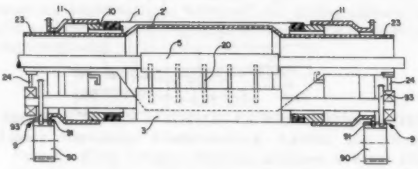


1. A thermal engraving press comprising a stationary frame, heater means supported at a fixed location on said frame, a hot die heated by said heater means at a fixed location also on said frame, platen means mounted on said frame for horizontal displacement along said frame toward or away from said fixed locations of said hot die and heater means, means for precisely adjusting the length of a non-yielding horizontal excursion of said platen along said frame, said platen supporting a work piece in a vertical position opposing said die which is easily visible when said platen is in an open position away from said hot die, precision adjustment means associated with said platen for two dimensionally adjusting the position of said work piece relative to said die in a substantially vertical plane on said platen, means for horizontally moving said platen means over said excursion along said frame toward and away from said die, the completion of the displacement of said platen over the non-yielding excursion pressing said work piece to a closed position against said hot die at the fixed location on said frame, said excursion preserving the precise adjustment of said non-yielding horizontal displacement along the entire length thereof and especially at the closed position where said platen means confronts and presses the work piece against the die at the end of said excursion along said frame, whereby the position of said work piece may be precisely adjusted in three dimensions relative to said die.

4,497,249
ARRANGEMENT FOR PREVENTING SCREEN DEFORMATION

Mathias Mitter, Falkenstrasse 57, Schloss Holte, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,881
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128324
Int. Cl.³ B41L 13/06
U.S. Cl. 101—120 37 Claims

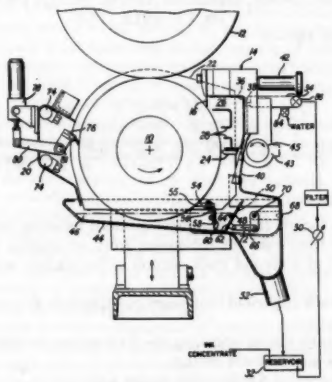


1. In a machine for applying at least one flowable liquid medium to a workpiece which is disposed in a predetermined path, a combination comprising a flexible rotary endless cylindrical printing screen which is liable to deform out of its cylindrical shape having first and second ends; rigid end rings connected to the ends of the screen; stretch means for applying to said screen an axial stretching force by way of said end rings; means for rotating said screen about its axis by way of said end rings so that successive increments of the screen advance along a portion of said path; and support means located within the confines of said screen separate from said stretch means for preventing deformation of the screen, said support means being adjustable with respect to said stretch means and closely adjacent to but normally out of contact with the internal surface of said screen and being spaced apart from that portion of said screen which is adjacent to said portion of said path.

4,497,250
INK FOUNTAIN

Frederick K. Dressler, East Hartland, Conn., assignor to Motter Printing Press Co., York, Pa.

Filed Feb. 8, 1983, Ser. No. 465,027
Int. Cl.³ B41F 31/06, 31/08, 31/04
U.S. Cl. 101—350 15 Claims



1. In a printing press having a roller and ink fountain means for applying ink to said roller, the improvement wherein said ink fountain means comprises:

a knife means closely spaced to said roller for interrupting the boundary layer of air on said roller surface;

ink applicator means for bringing ink into contact with a first portion of said roller, wherein said first portion is adjacent, in the rotational direction of said roller, said knife means;

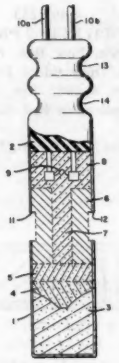
a reverse angle doctor blade bearing against said roller for scraping excess ink from said roller, said doctor blade being arranged adjacent, in the rotational direction of said roller, said portion; and

a pre-inking applicator means for bringing ink into contact with a second portion of said roller, said pre-inking applicator means being spaced from, and arranged, in the direction of rotation, preceding said ink applicator means.

4,497,251
LIQUID-DISABLED BLASTING CAP

Klaus G. Rucker, Kinnelon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1983, Ser. No. 469,954
Int. Cl.³ F42B 3/10
U.S. Cl. 102—202.6 13 Claims



1. In a blasting cap comprising a tubular metal shell integrally closed at one end and containing, in sequence, from said closed end, a base charge of a detonating explosive composition and a priming charge of a heat-sensitive detonating explosive composition, and being closed at its opposite end by an ignition assembly containing an ignition charge of a heat- or flame-sensitive exothermic-burning composition for igniting said priming charge, the improvement comprising a porous tubular member seated within said metal shell between said priming charge and said ignition charge, said porous tubular member having an axial perforation containing a substantially continuous charge of a heat-sensitive exothermic-burning composition communicating with said priming charge and with said ignition charge in said ignition assembly so as to provide a substantially continuous train of charges from said ignition charge in said ignition assembly to said base charge, the sidewall of said tubular metal shell being provided with multiple perforations adjacent said porous tubular member seated therein whereby liquids may gain access to said porous tubular member and the charge of exothermic-burning composition contained therein.

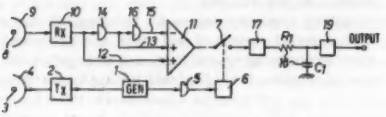
4,497,252
PROXIMITY RESPONSIVE APPARATUS

Richard J. Taylor, London, England, assignor to EMI Limited, Hayes, England

Filed Feb. 9, 1973, Ser. No. 331,313
Claims priority, application United Kingdom, Feb. 18, 1972, 7726/72
Int. Cl.³ F42C 13/04
U.S. Cl. 102—214 7 Claims

1. Proximity responsive apparatus comprising generating means for generating a pulse of energy, transmitter means for

transmitting said pulse, receiver means for receiving said pulse after reflection from a target, sampling means coupled to said receiver means for sampling the amplitude of a received pulse, as received at different times, over a period of shorter duration



than the pulse, comparing means coupled to said sampling means for comparing the amplitudes of the samples and output means coupled to said comparing means and adapted to respond to a predetermined relationship between said amplitudes by generating an electrical output signal.

4,497,253

ARMOR-PIERCING PROJECTILE

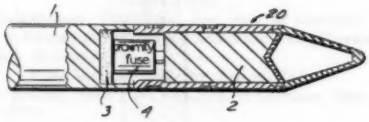
Udo Sabranski, Willich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 237,395

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004047

Int. Cl.³ F42B *11/22*

U.S. Cl. 102—476 **5 Claims**



1. An armor-piercing projectile having a hard core containing portion and a hollow charge containing portion arranged in front thereof with respect to the direction of flight, comprising proximity fuse means which are adapted to effect an ignition of the hollow charge prior to the impacting of the armor-piercing projectile on the target; said two portions being separable from each other during flight of the projectile; and including an explosive expulsion charge disposed in said projectile between said hard core containing portion and said hollow charge containing portion, said proximity fuse being operatively connected to said expulsion charge which is adapted to expel said hollow charge containing portion after being ignited due to the activation of the proximity fuse means.

4,497,254

ISOLATING DEVICE FOR AN OPENING TRAVERSED BY CONVEYOR CARS

Siegfried Schmidt, Olching, Fed. Rep. of Germany, assignor to Büropatent AG, Glarus, Switzerland

Filed Sep. 22, 1982, Ser. No. 421,396

Claims priority, application Switzerland, Oct. 7, 1981, 6434/81

Int. Cl.³ B61B *12/00;* **E06B** *7/00*

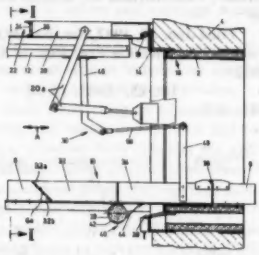
U.S. Cl. 104—1 R **13 Claims**

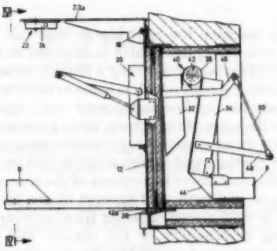
1. An isolating apparatus for an opening in a wall traversed by a conveyor track, comprising:

a door adapted to close said opening;

hinge means for swingably mounting said door adjacent said opening for displacement of said door from an open position wherein said door extends generally in the direction of said track into a closed position wherein said door closes said opening and lies perpendicular to said direction;

a movable section of said track adjacent said opening between fixed sections of said track, said movable section being shiftable in said direction to clear a path for said door; and





coupling means connecting said door to said movable section for displacing same in said direction as said door is displaced between said positions, said door being swingably mounted above said track.

4,497,255

MOBILE TRACK ALIGNMENT MACHINE

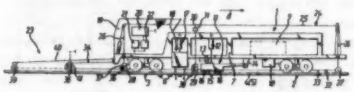
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 9, 1982, Ser. No. 440,427

Claims priority, application Austria, Dec. 23, 1981, 5553/81

Int. Cl.³ E01B *33/00*

U.S. Cl. 104—8 **9 Claims**



1. A mobile track alignment machine mounted for mobility on the track rails for movement from an aligned, first track section to a second track section to be aligned, which comprises

(a) track alignment tool means positioned in the second track section,

(b) drive means operating the tool means for alignment of the second track section,

(c) a control for the drive means and

(d) a reference system for operating the drive means control in response to an operating signal emitted by the reference system and including

(1) a reference line means forming a chord of an arc in which the track extends and

(2) three rail sensing elements each determining a respective ordinate of the arc, one of the rail sensing elements

being arranged at the track alignment tool means, a second one of the rail sensing elements being arranged in a leading portion of the first track section adjacent the second track section, a third one of the rail sensing elements being arranged in a trailing portion of the first track section, and an additional rail sensing element,

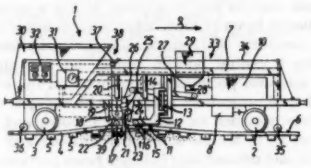
wherein the improvement comprises arranging the additional rail sensing element in the trailing portion of the first track section and associating the additional rail sensing element with a reference line means sensing element for determining residual track alignment errors, the reference line means sensing element associated with the additional rail sensing element emitting a correcting operating signal corresponding to the residual alignment error.

4,497,256

MOBILE TRACK POSITION CORRECTION MACHINE

Johann Hansmann, Klosterneuburg, Austria, and Frederick Fawcett, Kings Langley, England, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 8, 1983, Ser. No. 464,902
Claims priority, application Austria, Feb. 9, 1982, 489/82
Int. Cl.³ E01B *27/02, 27/17;* **G01F** *11/06*
U.S. Cl. 104—11 **21 Claims**



1. A mobile track position correction machine mounted for mobility on a track consisting of two rails fastened to ties supported on a track bed, comprising

(a) a track level adjusting device for lifting the track whereby a gap is created between the track bed and the ties at a respective point of intersection between a respective rail and a respective tie,

(b) a power drive for imparting a lifting stroke to the track level adjusting device,

(c) a track level reference and measuring system controlling the lifting stroke of the device, the system including

(1) a track level measuring device capable of delivering parameters corresponding to the measured track level, a desired track level, and a measurable track level above the desired track level, and

(d) pneumatic arrangement for introducing additional track bed material into the gap, the pneumatic arrangement including

(1) a storage container for the track bed material,

(2) a vertically adjustable pipe arranged to receive track bed material from the storage container and to be immersed in the track bed alongside a longitudinal edge of the respective tie, the pipe having a tapered end for ready penetration into the track bed and a flattened side defining an outlet for the additional track bed material facing the longitudinal tie edge,

(3) means for delivering a blast of compressed air into the pipe for moving the additional track bed material therethrough and out of the outlet,

(4) a power drive for vertically adjusting the pipe,

(5) a stop arranged on the pipe for engagement with the respective rail,

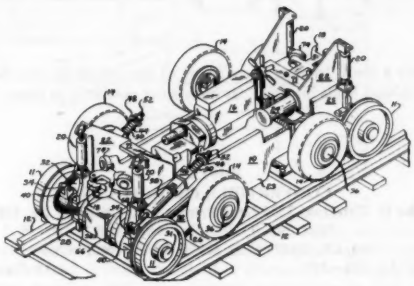
(6) a power-driven metering device arranged between the storage container and the pipe for delivering a metered amount of the additional track bed material from the container to the pipe, the additional track bed material amount being metered by the metering device in response to the parameter corresponding to the desired track level to fill the gap between the track bed and the lifted tie.

4,497,257

RETRACTABLE WHEELED VEHICLE

Eugene B. White, Jr., Park Forest, Ill., assignor to White Machinery Corporation, Joliet, Ill.

Division of Ser. No. 40,855, May 21, 1979, Pat. No. 4,355,584.
This application Dec. 3, 1981, Ser. No. 326,864
Int. Cl.³ B62D *61/12;* **B61H** *9/00;* **B61F** *13/00*
U.S. Cl. 105—215 C **6 Claims**



1. In a railcar moving vehicle of the type having rail wheels **11** for travelling on railroad track **12** and road wheels **14** for travelling on road, the improvement comprising, in combination, a pair of front rail wheels **11** and a pair of rear rail wheels **11**, a pair of front road wheels **14** and a pair of rear road wheels **14**, said front and rear road wheels **14** being movable between raised inoperative positions and lowered operative positions by hydraulic cylinder means **38**, and said front and rear rail wheels **11** being non-retractable so that said vehicle can move on rail when said road wheels are retracted and can move on roadway when said road wheels are extended down, said front pair of rail wheels **11** being mounted directly on a first internal planetary-type differential axle **30** having internal brake means **66**, said rear pair of rail wheels being mounted directly on a second internal planetary-type differential axle **30** having internal brake means **66**, and chain drive means **26** between one of said pairs of rail wheels **11** and an adjacent pair of road wheels **14** for providing differential drive to said pair of road wheels **14**.

4,497,258

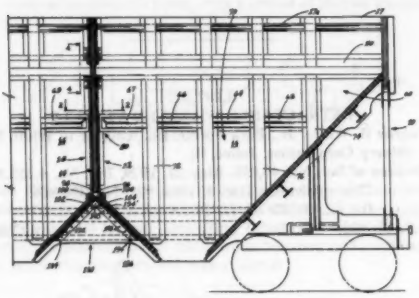
TRANSVERSE BULKHEAD CONNECTION TO FILAMENT WOUND VEHICLE BODY SIDES

Douglas C. Ruhmann, Brentwood; Frederick E. Vorwerk, St. Peters, and James D. Mundloch, Florissant, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,745
Int. Cl.³ B61D *5/02, 7/02, 49/00*
U.S. Cl. 105—248 **9 Claims**

1. A transverse bulkhead restraining assembly comprising: bulkhead support means integrally connected to transversely spaced sides of a filament wound vehicle body; said bulkhead support means including longitudinally spaced extensions extending inwardly from said vehicle body sides; opposite end portions of said transverse bulkheads located within said extensions on both sides of the vehicle with longitudinal clearance; resilient bulkhead cushioning means located adjacent each side

and between said bulkhead and each extension on each side of the car; said resilient bulkhead cushioning means extending



only a short distance transversely of the vehicle to introduce bulkhead loads into said car body sides primarily in shear.

4,497,259

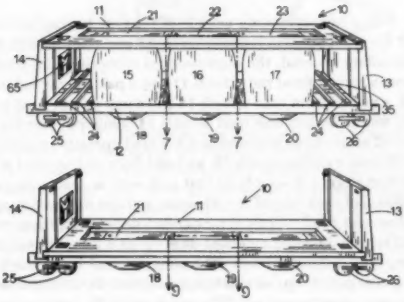
CONVERTIBLE FREIGHT CAR

John D. Titterton, 2203 Grey Frirars Ter., Chalfont, Pa. 18914

Filed Jan. 7, 1983, Ser. No. 456,539

Int. Cl.³ B61D *5/02;* **B65D** *88/22;* **B60P** *3/06*

U.S. Cl. 105—359 **11 Claims**



1. A convertible rail car for use in hauling a variety of material comprising:

a frame;

a first bulkhead located on one end of said frame;

said first bulkhead including a trailer hitch for attachment of a trailer to said convertible rail car;

a second bulkhead located on the opposite end of said frame;

a flatbed assembly having a top and bottom, said flatbed assembly movably mounted on said frame;

said flatbed assembly having at least two hopper wells for discharging material;

at least two collapsible flexible containers, each of said collapsible flexible containers having a top and bottom with said top of said collapsible flexible container connected to the bottom of said flatbed assembly and the bottom of said collapsible flexible container connected to said hopper wells so that said collapsible flexible container can be extended into an elevated condition when said flatbed assembly is raised and can be collapsed into said hopper well when said flatbed assembly is lowered, each of said collapsible flexible containers operable to support a material therein with only restraint of the top and bottom of said flexible container.

4,497,260

FLAT PALLET

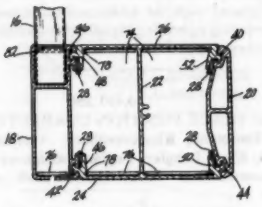
Anton Bucher, Ennetbaden, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 13, 1982, Ser. No. 417,062

Claims priority, application Switzerland, Sep. 23, 1981, 6119/81

Int. Cl.³ B65D *19/26*

U.S. Cl. 108—56.1 **3 Claims**



1. A flat pallet for use in the foodstuff industry wherein a high standard of hygiene is desired comprising a pair of substantially parallel long beams joined together by at least one cross beam, each of said long beams having a central substantially I-shaped beam portion connecting an upper portion and a lower member, said substantially I-shaped beam portion comprising a central portion connecting two arm portions wherein said arm portions are provided on the ends thereof with T-shaped projections adapted to be engaged with undercut grooves provided on said upper member and said lower member so as to secure said upper member and said lower member to said substantially I-shaped beam portion and further including a plurality of wedges provided between said arm portions and said upper member and said lower member for insuring good engagement between said first securing means and said second securing means.

4,497,261

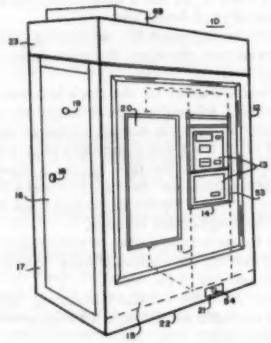
SECURITY ENCLOSURE FOR AN AUTOMATIC TELLER MACHINE

Richard A. Ferris, Rockville, Md.; Roger M. Hess, Mount Airy, N.C., and James R. Garman, Thurmont, Md., assignors to Commercial Modular Systems, Inc., Frederick, Md.

Filed Jun. 27, 1983, Ser. No. 508,255

Int. Cl.³ G07F *5/00*

U.S. Cl. 109—2 **8 Claims**



1. A portable terminal for conducting remote electronic banking transactions with pedestrians and motorists, using an automated teller machine housed within a secured enclosure that is adapted for installation in narrow places comprising

drive-through service islands, pedestrian walkways, malls, and retail outlets, said enclosure having an interior vault wherein a first volume of spaced occuped by said teller machine, as located for transactional operations responsive to said pedestrians and motorists, precludes access to the internal elements of said machine, and a second volume of space contiguous to said first volume, having a secured means of entry thereto, comprises working space for service personnel to service, test, and maintain said teller machine, wherein the improvement comprises:

a. turntable upon which said teller machine is mounted;

b. mechanical carriage supporting said turntable, operable by said service personnel for moving said teller machine from its operational location where transactions are performed by said pedestrians and motorists to an interior location within said secured enclosure interfacing said second volume of space comprising working space for visiting service personnel, and

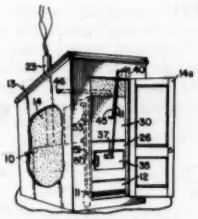
c. means, responsive to said service personnel, for rotation of said turntable and said teller machine mounted thereto through a sector of azimuth angles about a vertical axis so as to permit access by said service personnel for their routine servicing, testing, and maintaining of said interior elements of said teller machine.

4,497,262

WOOD FIRED BOILER

Clifford Nordine, Roosevelt, Minn. 56673

Filed Nov. 3, 1983, Ser. No. 548,284
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—234 **7 Claims**



1. A boiler construction, comprising:

(a) a base;

(b) a firebox mounted on said base, said firebox being a generally box-like structure having planar ends, sides and top walls, said walls having door and smoke discharge openings therein, said walls being constructed from spaced, metal tubular members of generally rectangular cross section, said tubular members each having a wider cross sectional dimension thereof coplanar with said respective wall, said tubular members including a plurality of header members and a plurality of wall forming members interconnected to provide a free flow of fluid throughout the walls of said box-like structure, and said structure further having metal plates overlying and connected to said walls to cover said spaces between said tubular members;

(c) a fluid storage tank mounted above said top wall;

(d) means interconnecting said box-like structure and said tank to provide a flow of fluid therebetween; and

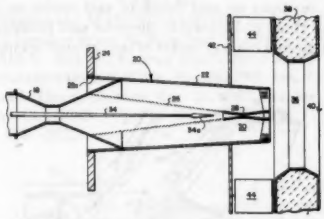
(e) said door is located in a front end wall of said firebox and said smoke discharge opening is located in said top wall adjacent a rear end wall of said firebox, said smoke discharge opening having a smoke stack extending upwardly therefrom with a movable damper therein, wherein said fluid storage tank is mounted on said plate covering said top wall and has a front wall adjacent said door and a rear wall adjacent said stack, said front and rear walls having openings connected by a tubular member, and a damper control rod extending through said tubular member connected to said damper whereby said damper can be controlled from the front of said boiler construction.

4,497,263

COMBUSTION SYSTEM AND METHOD FOR A COAL-FIRED FURNACE UTILIZING A WIDE TURN-DOWN BURNER

Joel Vatsky, Millburn, and Edmund S. Schindler, Maplewood, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Mar. 7, 1983, Ser. No. 472,807
Int. Cl.³ F23K *3/02*
U.S. Cl. 110—347 **17 Claims**



1. A system for combusting a coal-air mixture comprising an inner member; an outer member extending around said inner member and defining therewith a chamber surrounding said inner member, said inner member comprising an inlet end portion for receiving said mixture, a discharge end portion, and means for separating said mixture into a first stream and a second stream and for directing said first stream in an axial direction through said inner member and said second stream into said chamber; and means for varying the flow of said first stream through said inner member; said outer member having an open end defining an outlet for discharging said second stream from said chamber in a pattern surrounding said first stream and in a combustion-supporting relation to said first stream.

10. A method of combusting a coal-air mixture utilizing a burner having an inlet and at least one outlet, comprising the steps of passing said mixture to said inlet, separating the mixture in said burner into a first stream containing substantially coal and a second stream containing substantially air, varying the flow of said first stream through said burner, discharging said first stream from said outlet in a substantially axial direction, discharging said second stream from said outlet in a pattern surrounding said first stream and in a combustion-supporting relationship to said first stream, and providing additional air in a combustion-supporting relation to said streams.

4,497,264

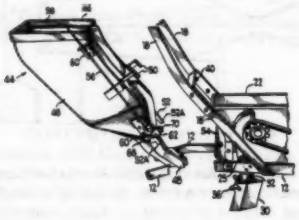
COMBINATION SEEDER AND FERTILIZER DISPENSER FOR HOME VEGETABLE GARDENS

Kenneth J. Pickett, Mishawaka, and Carl B. Derr, Bristol, both of Ind., assignors to Earthway Products, Inc., Bristol, Ind.

Filed Nov. 4, 1982, Ser. No. 439,355
Int. Cl.³ A01C *5/06*
U.S. Cl. 111—73 **15 Claims**

1. In combination, a seeder comprising a frame including upper and lower frame portions, said upper portion of said frame including a pair of laterally spaced upwardly extending frame-forming means having handle grips at their uppr ends, and there being therebetween a crossmember below said handle grips, a seed hopper on said frame for holding a quantity of seed to be dispensed, wheel means attached to a lower portion of said frame for supporting said frame as it is propelled over the ground by an operator, ground opening means on the lower portion of said frame and having a ground digging

means for opening a furrow in the ground, said ground opening means having adjustment means for setting the cutting depth of said ground opening means to a chosen value, and seed directing means for directing the flow of seeds to the ground behind said ground digging means, said wheel means and said ground opening mans being disposed to traverse only a single common track aligned therewith as said seeder is propelled over the ground; and a fertilizer dispenser attachable upon said frame and comprising: a fertilizer hopper for holding a quantity of fertilizer to be dispensed, a fertilizer dispensing chute having fertilizer directing means positioned to drop the fertilizer from the hopper at a given point, manually controllable metering means for regulating the rate of flow of said fertilizer out of said dispensing chute, and mounting means for mounting said fertilizer dispenser on said frame of said seeder so that said dispensing chute is disposed to dispense said fertilizer behind said front ground digging means of said ground opening means



and along said single common track, so that said fertilizer dispenser when attached to said seeder dispenses fertilizer alongside growing plants as said wheel means is propelled alongside said plants, said mounting means comprising upper mounting means for removably attaching said fertilizer hopper to an upper portion of said frame, and lower mounting means for removably attaching said fertilizer hopper to said lower portion of said frame, said lower portion of said frame including a laterally extending member, said lower mounting means engaging with said laterally extending member, said upper mounting means including a pair of forwardly and downwardly extending spring clips extending forwardly from said fertilizer hopper and configured for lateral springout engagement with the interior surfaces of said upwardly extending frame-forming means when insertingly pressed therebetween, said clips having depending fingers configured to engage over said crossmember when pressed downward thereagainst.

4,497,265

SEEDING IMPLEMENT

Clarence E. Hood, Jr., Clemson; Thomas R. Garrett, Six Mile, and Charles R. DuBose, Central, all of S.C., assignors to Clemson University, Clemson, S.C.

Filed Apr. 4, 1983, Ser. No. 481,789

Int. Cl.³ A01C *7/16*

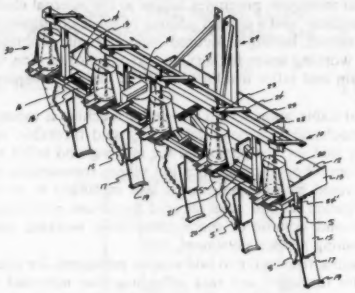
U.S. Cl. 111—86 **20 Claims**

1. An improved agricultural seeder implement comprising:

(a) a container for seed to be metered onto the ground, said container including a bottom wall that defines an opening therein;

(b) metering means located adjacent said bottom wall of said container, said metering means defining at least one orifice therein, said orifice being smaller than said opening in said bottom wall and concentric with respect thereto, said opening and said orifice cooperating to define a dispensing outlet for seed from said container; and

(c) positive feed means received in said bottom wall opening and along an axis eccentric to a central axis through said orifice in said metering means, said feed means being adapted for arcuate motion about its axis whereby during



said arcuate motion of said feed means, seed are positively metered through said orifice.

4,497,266

AUTOMATIC SEWING MACHINE AND CLOTH RETAINER THEREFOR

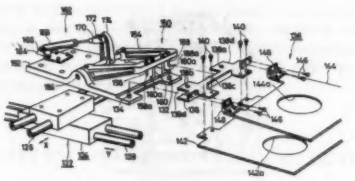
Jiro Fujita, and Iwao Yamane, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,473

Claims priority, application Japan, Sep. 29, 1982, 57-170692

Int. Cl.³ D05B *19/00*

U.S. Cl. 112—121.11 **8 Claims**



1. A cloth retaining device for an automatic sewing machine, comprising;

(a) a cloth retainer for holding a material to be sewn;

(b) a cloth retainer driving device for driving said cloth retainer while positioning and holding the same at a predetermined position; and

(c) a control device for supplying a driving signal to said cloth retainer driving device in accordance with programmed data, said driving device including a cloth retainer positioning and holding mechanism adapted to detachably position and hold said cloth retainer, and a drive mechanism adapted to position and hold said cloth retainer and to release the positioning and holding thereof in response to instruction signals supplied from said control device prior to the start of a sewing operation and after completion of the sewing operation, respectively.

4,497,267

LOW TORQUE PATTERN SELECTING MECHANISM FOR A SEWING MACHINE

Jan Szostak, Lincroft; Henry Schaeflern, Pittstown, and Walter H. W. Marsh, Scotch Plains, all of N.J., assignors to The Singer Company, Stamford, Conn.

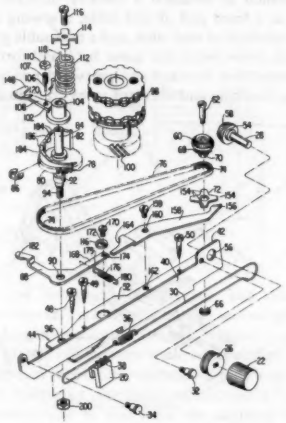
Filed Mar. 19, 1984, Ser. No. 590,932

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 A **7 Claims**

1. Pattern selecting mechanism for a sewing machine com-

prising a rotatable pattern selecting dial; a plurality of rotatable pattern controlling cams; a cam follower; a fixed shaft having the follower pivotally and slidably mounted thereon; a circularly arranged stepped cam rotatable about the axis of said shaft for lifting the follower into positions to engage different ones of the said cams as defined by the rotational position of the cam; an operable connection between the dial and stepped cam enabling an operator to position the stepped cam by turning the dial, said operable connection including a gear rotatably driven by the dial, another gear which carries the stepped cam and has a diameter greater than the diameter of said dial rotatable gear; and means operable by the dial for disposing the cam follower apart from the pattern cams while being lifted by the stepped cam, said means including linkage means fulcrumed to amplify the force applied thereto be the operation of the dial.

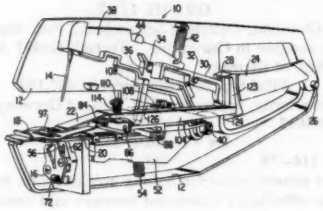


4,497,268

TOP WORK FEEDING ARRANGEMENT FOR A CHAIN STITCH SEWING MACHINE

Karl H. Killinger, Dover, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 16, 1984, Ser. No. 600,704
Int. Cl.[3] D05B *27/04, 1/06, 97/02*
U.S. Cl. 112—169 **6 Claims**



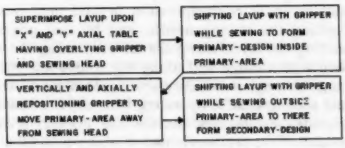
1. In a sewing machine; a sewing needle; a looper with a loop seizing point; a movable handle; mechanism responsive to the operation of the handle for moving the needle and looper into cooperative association for the formation of chain stitches, said mechanism including spring means which biases the handle to a defined hands off position; a feed dog with a work engageable end portion and a rearward extension; a work supporting bed; a pressure plate for holding a work piece against the bed, said plate including one or more openings for the feed dog end portion to extend through and engage the work piece; means mounting the feed dog along the rearward extension for pivotal movement in the machine about mutually perpendicular axes; and means responsive to the operation of the handle for pivoting the feed dog about one of said axes to thereby move said feed dog from an initial position with the end portion above the work piece to a position wherein the work piece is engaged by said end portion, and for moving the feed dog about the other axis while engaged with the work piece to thereby move the work piece relative to the needle; the feed dog being operably associated with said spring means for return thereby through movement about both of said axes to the said initial position.

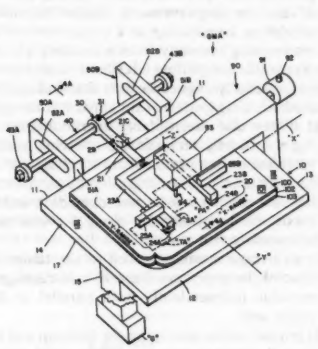
4,497,269

METHOD OF MAKING AESTHETIC QUILTING

Charles Schneider; Bruce H. Schneider, and Jerry S. Schneider, all of 518 N. 10th St., Council Bluffs, Iowa 51501

Continuation-in-part of Ser. No. 383,593, Jun. 1, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 488,043
Int. Cl.[3] D05B *57/00, 21/00, 11/00;* D05C *17/00*
U.S. Cl. 112—262.3 **13 Claims**


SUPERIMPOSE LAYUP UPON "X" AND "Y" AXIAL TABLE HAVING OVERLYING GRIPPER AND SEWING HEAD
SHIFTING LAYUP WITH GRIPPER WHILE SEWING TO FORM PRIMARY-DESIGN INSIDE PRIMARY-AREA
VERTICALLY AND AXIALLY REPOSITIONING GRIPPER TO MOVE PRIMARY-AREA AWAY FROM SEWING HEAD
SHIFTING LAYUP WITH GRIPPER WHILE SEWING OUTSIDE PRIMARY-AREA TO THERE FORM SECONDARY-DESIGN



1. Method for making quilting having a predetermined stitching-pattern including at least one cusp therealong and having an overall-area located both within and outside a rectangular primary-area having an x-lateral dimension and a y-longitudinal dimension, said method comprising the following steps:

(A) as the initial step, superimposing upon a horizontal tabletop a trilaminar layup of vertically aligned broad sheets including relatively thin facing and base fabric sheets sandwiching a relatively thick resiliently-compressible foam sheet, said tabletop extending laterally along an x-axis and extending longitudinally along a y-axis perpendicularly intersecting said x-axis, there being attached to and overlying said tabletop an interruptably operational sewing head including a vertically reciprocatable needle; and

(B) continuously employing a gripper means that is movably associated with said tabletop and movable independently in the vertical, for an x-range parallel to the x-axis, and for a y-range parallel to the y-axis, and according to the following steps:

(Ba) during a chronologically early-time-period, downwardly compressing the trilaminar layup with said gripper

means in flanking relationship to said primary-area and said sewing needle, and by said gripper means shifting the layup along the x-axis less than said x-range and along the y-axis less than said y-range through primary sewing-command means while continuously operating said sewing head whereby the sewing needle provides exclusively within said primary-area a primary-design portion of the predetermined stitching-pattern;

(Bb) after said earlytime-period and before a chronologically latertime-period, and through gripper reposition-command means performing the following sub-steps in order:

(i) moving the gripper means upwardly away from the layup, whereby the facing and base sheets are permitted to creep along the foam sheet toward the layup primary-area,

(ii) translating the gripper means in at least one of the x-lateral and y-longitudinal directions,

(iii) moving the gripper means downwardly so as to re-compress the layup in a new position, this and the two preceeding sub-steps being performed while the sewing head is maintained in nonoperating condition, and

(iv) utilizing said gripper means, shifting the layup primary-area remotely away from the sewing needle;

(Bc) during a chronologically latertime-period, maintaining said layup in re-compression in said new position and flanking the sewing needle, and by said gripper means shifting the layup along the tabletop along the x-axis less than said x-range and along the y-axis less than said y-range through secondary sewing-command means while said sewing head is operating whereby the sewing needle provides exclusively outside the primary-area another portion of the predetermined stitching-pattern; at least one of said sewing-command means providing non-linear stitchlines terminating at a cusp, some of the stitchlines intersecting remotely from a stitching-pattern cusp.

8. Apparatus for quilting a resilently compressible trilaminar layup of vertically aligned flexible sheets according to a predetermined stitching-pattern, said apparatus comprising:

(A) at least one interruptably operational sewing head having a vertically reciprocatable sewing needle for making stitchline components of said stitching-pattern;

(B) a horizontally extending tabletop peripherally surrounding said sewing needle and extending laterally along an x-axis and longitudinally along a y-axis perpendicularly intersecting said x-axis;

(C) a carriage means attached to the tabletop and located beyond the periphery thereof, said carriage means being movable independently both parallel to the x-axis and y-axis; and

(D) gripper means overlying the tabletop and being attached to said carriage means whereby said gripper means is co-movable with the carriage means and both parallel to the x-axis and to the y-axis, said gripper means also being vertically movable and having an up-station further away from the tabletop and having a down-station closer to the tabletop so as to downwardly compress a layup supported upon said tabletop.

4,497,270

METHOD AND APPARATUS FOR SEWING ELONGATED FABRIC PIECE

Ronald J. Boser, Dix Hills, N.Y., assignor to Yoshida Kogyo K.K., Tokyo, Japan

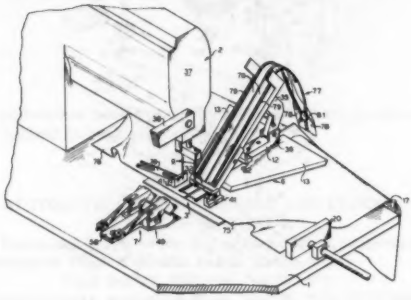
Filed Sep. 26, 1983, Ser. No. 535,729

Int. Cl.³ D05B *3/12, 21/00, 33/02*

U.S. Cl. 112—265.2 **22 Claims**

1. Apparatus for sewing elongated workpieces comprising a table on which is mounted guide surface means at a front end of said table, a sewing machine disposed intermediate of said table, and a releasable gripper means disposed via drive means for linear back and forth movement between respective forward and rearward stroke positions adjacent said sewing machine and outward away from the rear end of said table, said sewing machine having feed means for conducting a workpiece from said guide surface means, through said sewing machine, and toward said gripper means during operation of said sewing machine, said gripper means engaging a lead end of said workpiece and said drive means drawing said gripper means rearwardly under tension less than that applied to said workpiece by said feed means.

17. A method for operating an apparatus for automatically sewing elongated workpieces, said apparatus comprising a table on which is mounted a linearly directed, upstanding guidewall at a front end of said table, a sewing machine disposed intermediate of said table, and a releasable gripper means disposed via drive means for linear back and forth movement between respective forward and rearward positions adjacent said sewing machine and outward away from said rear end of



said table, said sewing machine having feed means for conducting a workpiece through said sewing machine in a rearward linear direction, said method comprising:

passing said workpiece along said guidewall such that a leading end thereof engages said feed means,

clamping said leading end of said workpiece in situ on said feed means,

operating said sewing machine, including said feed means, while substantially simultaneously removing the clamping of said leading end of said workpiece,

gripping the leading end of said workpiece as it is conducted rearwardly of said feed means, and

drawing said gripped workpiece rearwardly away from said table via said drive means with a tension less than that applied to said workpiece by said feed means.

4,497,271

STOWING STRUT FOR MAKING FAST CONTAINERS OR THE LIKE

Jürgen Gloystein, Osterholz-Scharmbeck, Fed. Rep. of Germany, assignor to Conver Ing. - Technik GmbH & Co., KG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,150

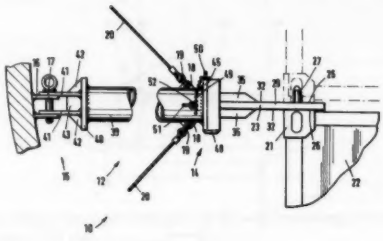
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201012

Int. Cl.³ B63B *25/24*

U.S. Cl. 114—75 **8 Claims**

1. In a stowing strut for lashing containers on board ship, said strut effecting a connecton between said container at a container corner having at least one corner brace, and a component firmly attached to the ship, the improvement wherein said stowing strut (**10**) consists of a support piece and an interlocking adjustment coupling bracket (**23**), said coupling bracket (**23**) consisting of a conical piece (**24**), a first plate (**29**) removably receiving said conical piece (**24**), a releasable coupling means on both ends of the support piece for removably connecting said support piece to said coupling bracket (**23**) and to said ship's component, said first plate (**29**) having an elongated longitudinal recess (**30**) with laterally opposed toothing (**31**), said conical piece (**24**) comprising a second plate (**25**) being of a width corresponding generally to the width of the

elongated longitudinal recess of said first plate and having laterally opposed edges bearing corresponding toothing (28) matching said toothing (31) of said first plate (29) and being inserted within said recess via said toothing with said conical piece second plate (25) being substantially smaller lengthwise than said recess (30) such that said conical piece (24) is adjustably positioned longitudinally within said recess (30), said conical piece (24) including a cone (27) for engagement with



said at least one container corner brace, and wherein said conical piece cone (27) is arranged on said second plate (25) in an off-center lengthwise direction, such that said conical piece (24) may be rotated 180 degrees while being shifted longitudially relative to said recess (30) wherein various length support pieces may be releasably coupled to said coupling bracket and said ship's component to maximize the adjustability of the container lashing system to rapidly lash various size containers to said ship.

4,497,272

MASTLESS SAILS

Sidney E. Veazey, Box 497, Rte. 2, Fredericksburg, Va. 22401

Filed Jun. 1, 1982, Ser. No. 383,673

Int. Cl.³ B63H *9/06*

U.S. Cl. 114—103 **4 Claims**

1. A mastless sail for a boat or ship comprising:

said means consisting of a balloon, parafoil and spinnaker for utilizing static and dynamic lift in combination with drag, gravity, and line tension to provide stability and propulsion forces for the boat or ship;

communication means located near the sail means when the sail means is aloft for use by the boat or ship;

sensing means located near the sail means when the sail means is aloft for use by the boat or ship; and

raising and lowering means for raising and lowering the communicating means and the sensing means.

4,497,273

APPARATUS FOR UNIFORM APPLICATION OF LIQUID TREATING MEDIA TO WORKPIECE WEBS

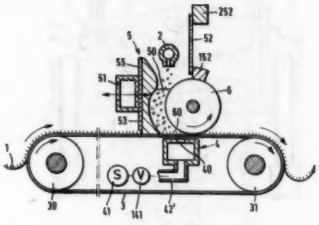
Mathias Mitter, Schloss Holte, Fed. Rep. of Germany

Division of Ser. No. 325,059, Nov. 25, 1981, Pat. No. 4,440,808. This application Aug. 30, 1982, Ser. No. 413,076

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044408

Int. Cl.³ B05C *3/18*

U.S. Cl. 118—50 **4 Claims**



1. Apparatus for uniformly applying the liquid fraction of a foamed liquid medium to a textile web, comprising foraminous means for supporting the bottom surface of the textile web in a predetermined plane and for advancing the web along a predetermined path in a predetermined direction; confining means defining adjacent to the upper surface of the textile web in said plane a circumambiently completely enclosed foam receiving space extending all the way to said path so as to prevent escape of foamed medium from said space and said path along the upper surface of the web in any direction, said confining means including a wall and said wall having means for admitting foamed medium into said space only from above; and a suction generating device disposed below said space adjacent said plane and having a slot arranged to draw liquid medium from said space into said path and hence into the material of the web, said wall further having a roller squeegee located downstream of and spaced apart from said slot, as considered in said direction, and arranged to force additional liquid medium into said path and hence into the material of the web so that those portions of the upper surface of the web which advance beyond said applicator device are entirely devoid of foam.

4,497,274

APPARATUS FOR SPREADING GLUE ONTO SHEET-LIKE BLANKS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 352,981, Feb. 26, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 520,767

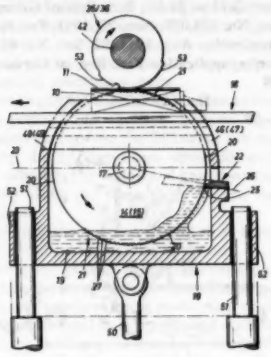
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108089

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—221 **1 Claim**

1. An apparatus for applying glue to laterally extending flaps of a partially formed package comprising a glue container, a first shaft rotatably mounted within the glue container, a pair of glue applying rollers mounted on said shaft in axial spaced apart relation, conveyor means extending orthogonally with respect to said shaft and located between said rollers for supporting a partially formed package having a pair of oppositely extending lateral flaps adapted to engage the peripheral surface of said rollers, a second shaft disposed parallel to said first shaft, a pair of backing rollers mounted on said second shaft in axial spaced apart relation with said backing rollers being opposed to said glue applying rollers for engagement with said flaps means for rotating said first and second shafts, cover means for said glue container disposed on opposite sides of

conveyor means, said cover means having aperture means through which the outer periphery of said glue applying rollers extend, and means for raising and lowering said glue container relative to said conveyor means.



4,497,275

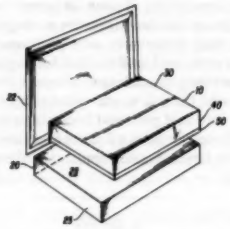
INK STAMP PAD AND RESERVOIR

Lewis H. Johnson, Mansfield; Lee A. Carlson, Southboro, and David M. Lunt, Somerville, all of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 407,367, Aug. 12, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 536,132

Int. Cl.³ B05C *1/00*

U.S. Cl. 118—268 **16 Claims**



1. A composite ink pad comprising:

a porous pad comprising a thermoplastic, nonelastomeric resin having a microporous open cell structure housing a quantity of ink; and

a nonelastomeric reservoir liner in substantial contact with one side of said ink pad, said reservoir liner having a microporous open cell structure, wherein the average pore diameter of the reservoir liner is greater than the average pore diameter of the ink pad,

said reservoir liner capable of absorbing at least a portion of ink leaking from said pad when the pad is exposed to at least one of the two following conditions:

(a) elevated ambient temperature higher than about 80° F,

(b) elevated humidity higher than about 80 percent humidity;

said reservoir liner permitting the porous pad to reabsorb at least a portion of said ink from the liner upon reexposure of the pad to at least one of the two following normal ambient conditions:

(a) ambient temperature less than about 70° F.;

(b) humidity less than about 80 percent relative humidity.

4,497,276

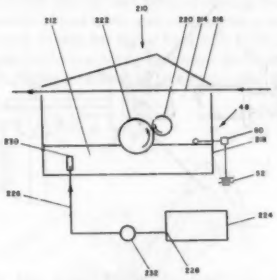
APPARATUS AND METHOD FOR APPLYING PLASTICIZERS TO FIBROUS FILTER MATERIAL

James W. Sullivan, Glendale, and Robert T. Lewis, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 16, 1981, Ser. No. 321,979

Int. Cl.³ B05B *9/00*

U.S. Cl. 118—694 **2 Claims**



1. An apparatus for applying a controlled amount of a liquid to a moving band of filamentary material, comprising:

a housing through which said band passes and defining a reservoir below and open to the path of said band;

a brush-type liquid applicator rotatably mounted below the path of said band for spraying liquid upwardly and onto said band for absorption by said band;

a dip roller rotatably mounted at said reservoir near said applicator brush and in contact with liquid collected in said reservoir to transfer liquid from said reservoir to said applicator brush;

a supply source of liquid;

flow communication means for establishing liquid flow communication from said supply source to said reservoir;

a constant volume rate of flow pump in said liquid flow communication means for moving a constant volume of flow of liquid from said supply source to said reservoir equal to the amount of liquid to be ultimately absorbed by said band such that, as the liquid not initially absorbed by said band drains back into said reservoir, the liquid level in said reservoir rises so that said dip roller, not having to carry the liquid as far from the raised liquid level in said reservoir to said applicator brush as when the liquid level was lower, carries an excess of liquid to said applicator brush for absorption by said band.

4,497,277

BELL OF OPAQUE FUSED SILICA

Karl A. Schulke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus-Quarzschmelze, Hanau am Main, Fed. Rep. of Germany

Filed Feb. 18, 1983, Ser. No. 467,998

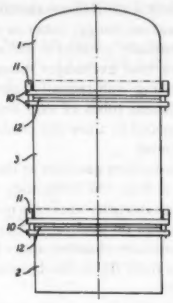
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208381

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—733 **20 Claims**

1. A bell of opaque fused silica for use in a high-temperature process, preferably the deposition of silicon, comprising: a dish-shaped end section; a tubular center section; a tubular end section; and means on the ends of the sections comprising a flange on at least one section to be joined to another for joining the sections together in the order recited, the tubular center

section being substantially longer than the other sections, whereby to enclose the zone of highest temperature in the



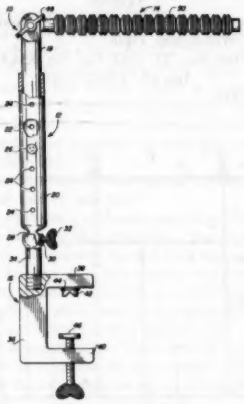
high-temperature process, and all the sections being of a diameter over 500 mm.

4,497,278

PORTABLE BIRD PERCH ASSEMBLY

Richard T. Balder, 4420½ Sepulveda, Sherman Oaks, Calif. 91403, and Michael P. Knutsen, 3833 Sawtelle Blvd., Los Angeles, Calif. 90066

Filed Jun. 11, 1984, Ser. No. 619,779
Int. Cl.³ A01K *31/12*
U.S. Cl. 119—26 **20 Claims**



1. An improved collapsible, portable bird perch assembly, said perch assembly comprising, in combination:

(a) an upraised support arm;

(b) anchoring means secured to said arm adjacent the lower end thereof for releasably attaching said perch assembly to different types of substrates; and,

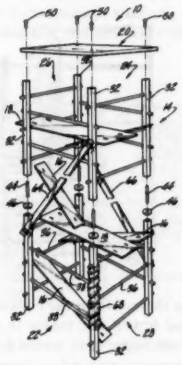
(c) a bird perch arm secured to the upper end of said upraised supper arm by pivot means for movement between an operative perch position and a compact, collapsed storage position, whereby said assembly is carried from one location to another with said perch arm being collapsed and aligned with said support arm for ease of transport, and whereby said assembly, when at a desired location, is secured by said anchoring means to a substrate and said perch arm is moved about said pivot means to an operative position.

4,497,279

ANIMAL PLAY AND EXERCISE STRUCTURE

Audrey R. Bell, 5252 Blair Rd., Perry, Ohio 44081

Filed Feb. 28, 1983, Ser. No. 470,051
Int. Cl.³ A01K *15/00*; A63B *17/04*
U.S. Cl. 119—29 **11 Claims**



1. An animal play and exercise apparatus, especially for cats, comprising:

a first and a second rigid frame, each frame having a plurality of vertical support members with bores in the ends thereof and a plurality of horizontal rod members;

said support members each having a plurality of apertures, along its length;

said rod members insertable into said apertures interconnecting said support members to form said first and said second frames;

a plurality of recesses adjacent the ends of each of said rod members;

a plurality of plugs insertable into said recesses, said plugs abutting said support members for maintaining said rod members in said apertures;

a plurality of peg and ring-like spacer assemblies, with a spacer slidably disposed along each of said pegs;

said pegs insertable into said bores in said first frame vertical support members and into bores in said second frame vertical support members interconnecting said first frame and said second frame in vertical alignment with said spacers separating said frames;

a plurality of lateral ramp members and at least one horizontal bed member;

a plurality of leather thongs connecting said ramp members to more than one of said rod members on an incline relative to said horizontal rod members; and

a plurality of leather thongs connecting said bed members to more than one of said rod members horizontally relative to said rod members.

4,497,280

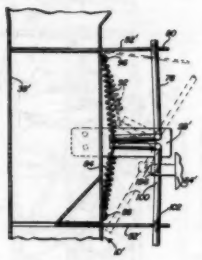
TIMER ACTUATED PET FEEDER

Grant H. Sanstrom, and Beverly J. Sanstrom, both of P.O. Box 138, Parker, Wash. 98939

Filed Jan. 9, 1984, Ser. No. 568,886
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51.11 **9 Claims**

9. A feeder including a hopper for receiving fluent material and provided with a lower downwardly discharging discharge chute, vertical spaced portions of said chute including inversely openable and closable gate means operatively associated therewith for controlling the downward flow of fluent material from said hopper through and from the lower end of said chute, force means yieldingly biasing said gate means

toward positions with the upper gate means open and the lower gate means closed, timer actuatable electrically operated motor means operatively connected to said gate means for shifting said upper and lower gate means toward the closed and open positions, respectively, thereof, said motor means being operatively connected to said lower gate means, only,



for direct shifting thereof from the closed position toward the open position, said lower gate means including a lost motion conection with said upper gate means for positively opening said upper gate means responsive to closing of said lower gate means and allowing said lower gate means to open, under the control of said motor means, in advance of closing of said upper gate means under the influence of said force means.

4,497,281

HEATER

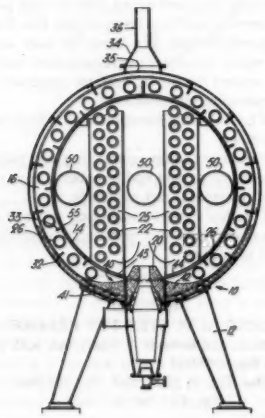
Gerardus A. Markus, S/Gravenzande, Netherlands, assignor to BS&B Engineering Company Inc., Houston, Tex.

Continuation of Ser. No. 494,689, May 17, 1983, abandoned, which is a continuation of Ser. No. 257,128, Apr. 24, 1981, abandoned. This application Apr. 23, 1984, Ser. No. 602,271

Claims priority, application United Kingdom, Jun. 17, 1980, 80190825

Int. Cl.³ F22B *37/10*

U.S. Cl. 122—248 **8 Claims**



1. A heater for heating a process fluid, said heater comprising, in combination:

(a) an elongated main chamber;

(b) a cylindrical wall extending axially of said chamber;

(c) end walls of said chamber;

(d) at least one high intensity burner mounted to project its products of combustion into the main chamber in a direction transverse to the axis of the main chamber;

(e) an annular secondary chamber concentrically surrounding the cylindrical wall of the main chamber;

(f) a first set of heat exchanger tubes in the main chamber, extending substantially parallel to the axis thereof;

(g) a second set of heat exchanger tubes in the secondary chamber, extending substantially parallel to the axis thereof, the adjacent tubes of said first and second sets being laterally spaced to allow the products of combustion to flow therearound;

(h) at least one combustion gas inlet to the secondary chamber comprising at least one refractory shield in which at least one said high intensity burner is mounted in the main chamber, and wings on said refractory shield which extend into the secondary chamber and which are so shaped as to guide gases from the main chamber into the secondary chamber; and

(i) at least one flue outlet from the secondary chamber positioned at a location opposite to the combustion gas inlet from the main chamber.

4,497,282

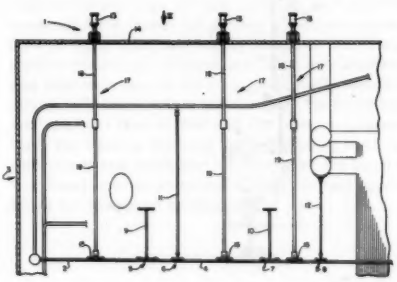
APPARATUS FOR DESLAGGING STEAM GENERATOR TUBES

Mark H. Neundorfer, Chesterland, Ohio, assignor to Neundorfer, Inc., Willoughby, Ohio

Filed Nov. 23, 1983, Ser. No. 554,616

Int. Cl.³ F28G *7/00*

U.S. Cl. 122—379 **19 Claims**

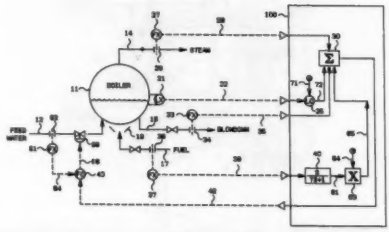


1. Apparatus for deslagging parallel tubes in a steam generator by application of high frequency shock energy comprising vibrator means for producing high frequency shock energy, base plate means extending across and contacting portions of each of a plurality of said parallel tubes for distributing said high frequency shock energy over a relatively large area of said plurality of tubes, means connecting said vibrator means to said base plate means for transmitting high frequency shock energy from said vibrator means to said base plate means, said connecting means including at least one interference fit tapered connection, and wherein means are provided for securing the base plate means in a position against the plurality of tubes to effect good transmission of high frequency shock energy while permitting thermal expansion of the tubes during operation of said steam generator.

4,497,283
BOILER CONTROL

Ronald J. LaSpisa, and Merle R. Likins, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 18, 1983, Ser. No. 553,443
Int. Cl.[3] F22D 5/26
U.S. Cl. 122—451.1 10 Claims



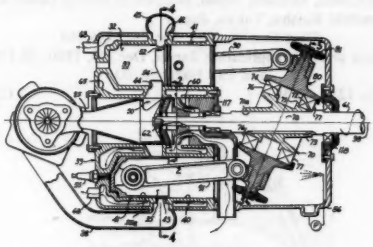
1. Apparatus comprising:
a boiler;
means for supplying feedwater to said boiler;
means for withdrawing steam from said boiler;
means for supplying fuel to a combustion system associated with said boiler, wherein the combustion of said fuel supplies heat to said boiler;
means for establishing a first signal representative of the actual flow rate of said steam;
means for establishing a second signal representative of the actual liquid level in said boiler;
means for establishing a third signal representative of the desired liquid level in said boiler;
means for comparing said second signal and said third signal and for establishing a fourth signal which is responsive to the difference between said second signal and said third signal, wherein said fourth signal is scaled so as to be representative of the difference between the flow rate of steam withdrawn from said boiler and the actual flow rate of said feedwater required to maintain a desired liquid level in said boiler;
means for establishing a fifth signal representative of the actual flow rate of said fuel;
means for establishing a biasing signal, which compensates for the swell or shrink caused by a change in the flow rate of said fuel, in response to said fifth signal;
means for summing said first signal, said fourth signal and said biasing signal to establish a control signal representative of the flow rate of said feedwater required to maintain a desired liquid level in said boiler; and
means for manipulating the flow rate of said feedwater to said boiler in response to said control signal to thereby maintain a desired liquid level in said boiler.

4,497,284
BARREL TYPE ENGINE WITH PLURAL TWO-CYCLE CYLINDERS AND PRESSURIZED INDUCTION

Buford J. Schramm, 1330 E. Fremont Dr., Tempe, Ariz. 85281

Filed Aug. 30, 1982, Ser. No. 413,239
Int. Cl.[3] F02B 75/26; F01B 13/06
U.S. Cl. 123—41.47 7 Claims

1. In a two-cycle engine having an engine axis, an engine block, an axially-extending output shaft journaled to said block, each cylinder having a cylinder axis, and each cylinder axis being parallel to said engine axis, a piston slidably fitted in each of said cylinders for reciprocation along its respective cylinder axis, said cylinders being symmetrically centered around said engine axis, swash plate means mounted to said output shaft for rotation therewith, connecting rod means interconnecting said pistons to said swash plate means whereby reciprocation of said pistons is converted to rotation of said output shaft by said swash plate means, the improvement comprising: an exhaust port from each cylinder facing toward said engine axis and opening onto a generally circular surface, a rotary valve mounted to said output shaft and rotated therewith, said rotary valve being principally bounded by a generally circular surface, said surfaces being coaxial, and spaced from one another in close proximity, said rotary valve having a timing port therethrough adapted, when the rotary valve is turned, sequentially and alternatively to open and to

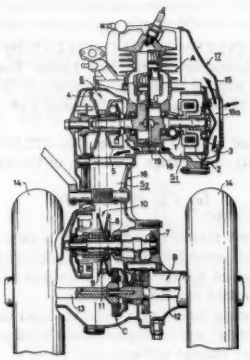


occlude said outlet ports so as respectively to enable and to impede flow of exhaust gases from the cylinders; a central exhaust gas collector receiving exhaust gases passed by said rotary valve from said cylinders; each of said exhaust ports being partially occluded by an axially-extending exhaust port web which serves to support a sliding piston ring as it moves along the exhaust port, there being a coolant passage extending through said exhaust port web through which coolant flows to cool said web.

4,497,285
COOLING STRUCTURE FOR INTERNAL COMBUSTION ENGINE

Makoto Kondo, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,425
Claims priority, application Japan, Sep. 9, 1981, 56-141912; Sep. 11, 1981, 56-135078[U]; Sep. 18, 1981, 56-138856[U]
Int. Cl.[3] F01P 1/06
U.S. Cl. 123—41.65 8 Claims



1. A cooling structure for an internal combustion engine, comprising a crankcase for housing an engine crankshaft, a substantially closed transmission case integral with said crankcase, and an outside cover defining a cooling chamber between said cover and crankcase, said outside cover and said transmission case being located substantially at both ends of said engine crankshaft, said transmission case incorporating therein power

transmission means for an axle, said outside cover incorporating a first air cooling means for introducing atmospheric air from the outside, said cooling chamber and said transmission case communicating with each other through at least one communicating passage, an opening of said communicating passage being positioned inside said outside cover.

4,497,286

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

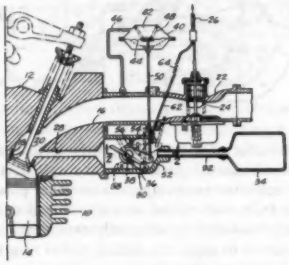
Shoji Masuda, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,745

Claims priority, application Japan, Dec. 13, 1980, 55-175256

Int. Cl.³ F02B *27/00*

U.S. Cl. 123—52 M **7 Claims**



1. An intake system for an internal combustion engine having a valved intake port, comprising an intake passage extending to the valved intake port of the engine, a throttle valve disposed in said intake passage, a chamber with only one opening in communication with said intake passage between said throttle valve and the valved intake port, a control valve between said chamber opening and said intake passage to control all communication therebetween, and vacuum responsive valve control means for actuating said control valve responsive to vacuum in said intake passage to open said control valve responsive to increased intake passage vacuum and to close said control valve responsive to decreased intake passage vacuum and for overriding said intake passage vacuum to close said control valve with closure of said throttle.

4,497,287

INTAKE SYSTEM WITH OSCILLATOR TUBES

Herbert Schleiermacher, Brühl, and Lothar Bauer, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,815

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119190

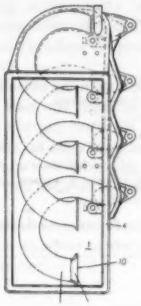
Int. Cl.³ F02M *35/10*

U.S. Cl. 123—52 MC **22 Claims**

1. A multi-part intake system having a flow direction of suctioned intake combustion air for multi-cylinder internal combustion engines which include a cylinder head for said cylinders, said intake system comprising:

an intake housing including a cylinder-head side as well as having an inside and having an intake housing wall as well as inside and outside surfaces; and

intake oscillator tubes which are curved in more than one plane and which extend inside said intake housing as well as along said intake housing wall toward the cylinder head, said oscillator tubes each being connected with said intake housing in common and the cylinder head as well as respectively having a first end and a second end, with said first end of each oscillator tube being provided with an intake funnel which opens into said common intake housing, and with the second end of each oscillator tube being seated closely on said cylinder head, said intake oscillator tubes at least for a portion thereof consisting of adjoining shell halves having abutting surfaces formed along a single plane thereof lying in flow direction of suctioned intake combustion air with the shell halves being connected with each other, wherein said intake oscillator tubes cross each



other inside the common intake housing, said adjoining shell halves crossing each other at the tube crossings which lie substantially in a single plane perpendicular to said plane of said abutting surfaces being unified into one structural part, said intake housing wall on the cylinder-head side being constructed as a shell half.

4,497,288

INTAKE DEVICE FOR AN ENGINE

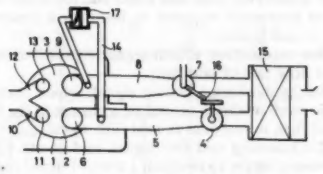
Yoshikatsu Nakano, Saitama; Masaaki Matsuura, and Minoru Akiyama, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1983, Ser. No. 465,716

Claims priority, application Japan, Feb. 13, 1982, 57-20667

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—52 M **4 Claims**



1. An air intake device for an internal combustion engine comprising an air inlet, a cylinder having inlet valve means, a primary carburetor receiving air from said air inlet and delivering an air/fuel mixture to a first intake passage coupled to said inlet valve means; a secondary carburetor receiving air from said air inlet and delivering an air/fuel mixture to a second intake passage coupled to said inlet valve means; means establishing fluid communication between said first intake passage and said second intake passage and, one-way valve means in said means establishing fluid communication allowing fluid from said first intake passage to said second intake passage.

4,497,289

BEARING CAP FOR AN OVERHEAD CAM-SHAFT OF AN INTERNAL COMBUSTION ENGINE

Gérard Bortolussi, Franconville, France, assignor to Societe Anonyme Automobiles Peugeot and Societe Anonyme Automobile Citroen, both of, France

Filed Jun. 7, 1983, Ser. No. 501,916

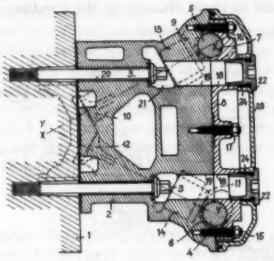
Claims priority, application France, Jun. 14, 1982, 82 10330

Int. Cl.³ F01L *1/46*

U.S. Cl. 123—90.27 **6 Claims**

6. An internal combustion engine comprising a cylinder

block, a cylinder head, at least one overhead cam-shaft journalled in bearings, one half of which bearings is formed in the cylinder head which is fixed by bolts to the cylinder block while the other half of said bearings is formed in caps fixed by studs to the cylinder head, wherein there are two overhead



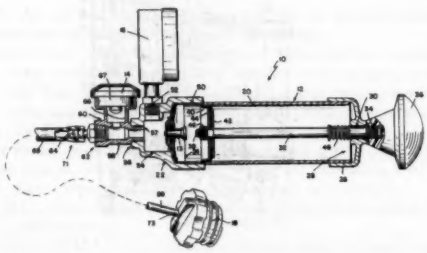
cam-shafts and each cap is provided for both cam-shafts and is secured by a central stud located between the two cam-shafts and has between each cam-shaft and said central stud an aperture for the passage of a bolt securing the cylinder head to the cylinder block.

4,497,290

FUEL SYSTEM TESTER AND PRIMER

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Apr. 11, 1983, Ser. No. 483,717
Int. Cl.³ F02N *9/04*
U.S. Cl. 123—179 G **6 Claims**



1. For use with a vehicle fuel system including a fuel tank having a filler neck provided with fastening elements, a portable hand held apparatus for pressurizing the fuel tank and the system, the apparatus comprising

a pump for pressurizing the fuel system, a closure member for coupling the pump to the filler neck, the closure member including fastening elements for removably engaging the fastening elements on the filler neck, a conduit connecting the pump to closure member,

pressure relief means for relieving excess pressure within the fuel system, and

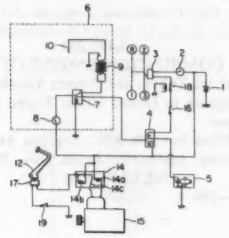
means for coupling the pressure relief means to the pump.

4,497,291

FULL ECONOMIZER FOR VEHICLES

Isao Hamano; Akira Morishita; Yoshifumi Akae; Toshinori Tanaka, and Kiyoshi Yabunaka, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 557,224
Claims priority, application Japan, Dec. 2, 1982, 57-183865
Int. Cl.³ F02D *35/00*
U.S. Cl. 123—179 BG **3 Claims**



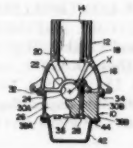
1. A fuel economizer for vehicles comprising a first clutch switch which detects a tread of a clutch pedal of the automobile, a second clutch switch which detects completion of the tread of the clutch pedal, a neutral switch which detects a neutral position of a transmission, a water temperature sensor which detects that a cooling water temperature of an engine falls within a predetermined range, an engine revolution sensor which detects that a rotational speed of the engine is less than a predetermined value, and a control means for automatically stopping the engine a predetermined time after signal generation of said neutral switch when supplied with respective detection signals of said neutral switch and said water temperature sensor and not supplied with a detection signal of said first clutch switch, and for automatically starting the engine when supplied with respective detection signals of said second clutch switch and said engine revolution sensor and not supplied with the detection signal of said neutral switch.

4,497,292

BEARING BEAM STRUCTURE

Yoshimasa Hayashi, Kamakura, and Naoki Ogawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 13, 1982, Ser. No. 433,886
Claims priority, application Japan, Oct. 14, 1981, 56-163988
Int. Cl.³ F02F *7/00*; F02B *77/13*; F16M *1/021*
U.S. Cl. 123—195 H **7 Claims**



1. A bearing beam structure of an internal combustion engine having a cylinder block formed with a plurality of bearing sections, said bearing beam structure comprising:

a plurality of main bearing cap sections each of which associates with a cylinder block bearing section to rotatably support a journal of a crankshaft;

a central beam section integrally directly connected with a central part of a lower end portion of each bearing cap

section to securely connect said bearing cap sections with each other;

first and second side beam sections integrally directly connected respectively to opposite end parts of the lower end portion of each bearing cap section to securely connect said bearing cap sections with each other; and

first and second side wall sections respectively integrally connected with opposite side portions of each bearing cap section to securely connect said bearing cap sections with each other.

4,497,293

INTERNAL COMBUSTION ENGINE OF MOTORCYCLE

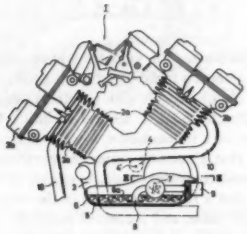
Masatoshi Takagi, Tokyo, and Wataru Annaka, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1982, Ser. No. 442,990

Claims priority, application Japan, Nov. 28, 1981, 56-189892

Int. Cl.³ F02M *1/00*

U.S. Cl. 123—196 A **13 Claims**



11. An internal combustion engine for a motorcycle, comprising; at least one cylinder, power transmission means, a crankcase accommodating therein said transmission means, and an oil filter disposed at the rear portion of said crankcase, an oil pump disposed within said crankcase,and an oil strainer connected to an inlet of said oil pump, said oil filter being connected to an outlet of said oil pump, a water pump detachable from and positioned outside of said crankcase, a rotary shaft of said water pump being substantially coaxial with a rotary shaft of said oil pump, said crankcase being subdivided into right and left cases, said water pump being secured to said right case from the outside, and said oil pump being secured to said right case from the inside, lower portions of said right and left cases together defining an oil pan, said oil strainer being disposed in said oil pan, and said oil pan being positioned below said transmission means.

4,497,294

ELECTRONICALLY CONTROLLED GOVERNOR FOR DIESEL ENGINES

Kouichi Izumi, Shiki, and Yasuhiro Hiyama, Musashino, both of Japan, assignors to Diesel Kiki Co., Ltd., Japan

Filed Sep. 15, 1983, Ser. No. 532,735

Claims priority, application Japan, Sep. 16, 1982, 57-159680

Int. Cl.³ F02D *31/00*

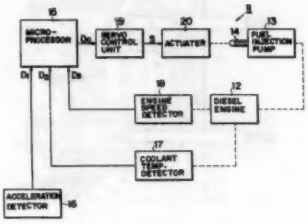
U.S. Cl. 123—357 **6 Claims**

1. An electronically controlled governor for Diesel engines, in which the positional control of a fuel adjusting member of a fuel injection pump for injecting and supplying fuel to a Diesel engine is electronically carried out to control the rotational speed of the Diesel engine, said governor comprising:

a computing means responsive to at least one signal indicative of an operating condition of the Diesel engine at each instant for computing positional data showing a target position of said fuel adjusting member for obtaining an amount of fuel injection corresponding to said operating condition;

at least one detecting means for detecting said operating condition of the Diesel engine;

a correcting means for effecting a data correcting operation on said positional data in accordance with predetermined correction formulae in order to stabilize the controlling operation and to improve the response characteristics with respect to rapid changes in the condition of engine operation;



means for determining the coefficients in said data correction formulae in accordance with the detected result of said detecting means; and

means responsive to the output data from said correcting means for controlling the position of said fuel adjusting member.

4,497,295

MINIMUM-MAXIMUM SPEED GOVERNOR FOR FUEL-INJECTED ENGINES

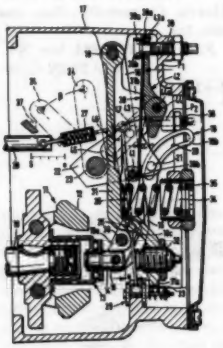
Werner Brühmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 552,199

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3246992

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—374 **10 Claims**



1. A minimum-maximum speed governor for fuel-injected internal combustion engines, in particular for Diesel vehicle engines, comprising:

a governor lever coupled with a supply quantity adjusting member of an injection pump, said governor lever being actuatable at least indirectly by means of a governor sleeve moved in accordance with engine speed and by means of an adjusting member pivotable in order to vary a fuel supply quantity arbitrarily,

a leaf spring acting as an idling spring, one end of said spring rests on a spring support which is adjustable in order to adjust a prestressing force of the leaf spring and another end of said spring support transmits the force of the leaf spring onto the governor sleeve,

a support bearing placed against the leaf spring, the support bearing being provided with a curved rolloff path determining the effective spring length of the leaf spring, and

an adjusting cam actuatable by the adjusting member, by means of which cam the operative position of the support bearing is variable in accordance with the pivot angle (β) of the adjusting member,

said curved rolloff path of the support bearing being adjustable toward the leaf spring by means of the adjusting cam in accordance with the pivot angle (β) of the adjusting member which is pivotable out of the idling position into a load position, the adjustment of the support bearing being such as to increase a prestressing force of the leaf spring, and that the adjusting cam is supported on a force transmission lever.

4,497,296

ELECTRONIC CONTROL SYSTEM FOR CARBURETOR AND CONTROL METHOD THEREFOR

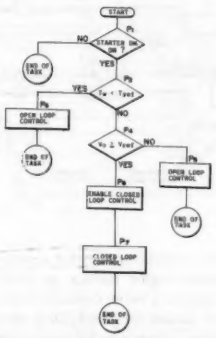
Masataka Nakajima, Tokyo, and Yasushi Mase, Hachioji, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 27, 1982, Ser. No. 437,001

Claims priority, application Japan, Oct. 30, 1981, 56-173985

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—440 **12 Claims**



1. An air/fuel ratio control system for an electronically controlled carburetor of an engine comprising:

an air/fuel ratio control means in said carburetor for controlling carburetion ratio of fuel supplied to said engine, said air/fuel ratio control means including an actuator responsive to a control signal to control said carburetion ratio of the fuel;

a starter switch which is turned on during engine cranking;

an engine coolant temperature sensor for producing a first signal representative of engine coolant temperature;

an O_2 sensor for producing a second signal representative of air/fuel ratio;

a CLOSED LOOP disabling condition detecting means for detecting a preselected CLOSED LOOP disabling condition, said detecting means being responsive to turning on of said starter switch to detect said preselected condition to produce a third signal when said preselected condition is satisfied; and

a control unit for selectively performing CLOSED LOOP and OPEN LOOP control for producing said control signal for controlling the operation of said actuator, said control unit performing said CLOSED LOOP control for controlling the actuator operation based on said second signal so as to maintain the air/fuel ratio at a stoichiometric value when said first signal value is above a given value and, otherwise, performing said OPEN LOOP control, said control unit being responsive to said third signal to disable said CLOSED LOOP control even when said first signal value is above said given value.

4,497,297

CONTROL SYSTEM FOR AIR/FUEL RATIO ADJUSTMENT SYSTEM

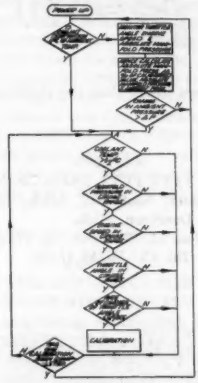
Neville H. Daniel, Four Oaks, and Hugh M. Duncan, Moseley, both of England, assignors to Austin Rover Group Limited, England

Filed Jul. 26, 1984, Ser. No. 634,584

Claims priority, application United Kingdom, Aug. 15, 1983, 8321175

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—440 **6 Claims**



1. A control system for an air/fuel ratio measurement and adjustment system for an internal combustion engine, the control system comprising: means for measuring the extent of engine inlet throttle opening, engine speed and absolute inlet manifold pressure; means for deriving from stored information an expected inlet manifold pressure to correspond to the measured throttle opening and engine speed; means for deriving and storing the ratio between the expected and actual manifold pressures, means for comparing a subsequently derived ratio between the expected and actual manifold pressures with a previously determined such ratio and means for initiating measurement of the air/fuel ratio in response to a predetermined extent of change in said pressure ratio.

4,497,298

DIESEL FUEL INJECTION PUMP WITH SOLENOID CONTROLLED LOW-BOUNCE VALVE

Frank Ament, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

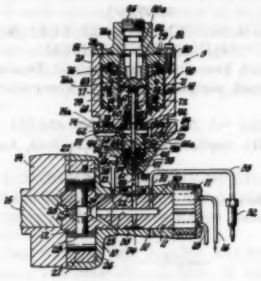
Filed Mar. 8, 1984, Ser. No. 587,513

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—450 **3 Claims**

1. In an engine driven, solenoid valve controlled, spill-inject-spill type fuel injection pump having a housing means with an injection pump means therein for sequentially supplying pressurized fuel via a discharge passage means to a plurality of injectors, a supply pump means for supplying fuel via an inlet passage means to the injection pump means, a spill passage means in the housing means in communication at one end with the discharge passage means and at its other end with the inlet passage means and having a solenoid actuated valve including an armature and needle valve operatively associated therewith for controlling the spill-inject-spill flow from the discharge passage means, the improvement wherein said needle valve is a two-piece valve and includes a needle valve tip with a stem extending therefrom, at least the needle valve tip and a portion

of said stem being of steel, the remainder of said stem being of a compliant material having an elastic modulus in the range of



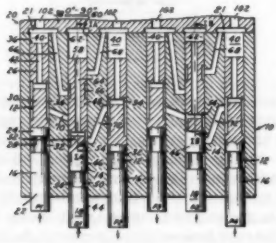
from 50 to 120 times lower than the elastic modulus of said steel.

4,497,299

PLUNGER TYPE FUEL INJECTION PUMP

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 13, 1984, Ser. No. 570,556
Int. Cl.³ F02M *41/00*
U.S. Cl. 123—451 **8 Claims**



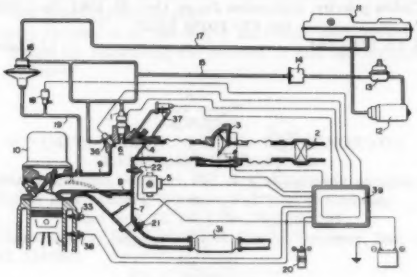
1. A fuel injection pump of the plunger type for an automotive type internal combustion engine, the pump having a plurality of fuel pumping plungers corresponding in number to the number of engine cylinders and each mounted for a reciprocatory movement in a plunger barrel through a fuel pumping stroke in one direction and a fuel intake stroke in the opposite direction, a number of fuel distribution plungers having a source of fuel under pressure connected thereto, the latter number being less than the number of pumping plungers, the distribution plungers also being reciprocably mounted in a plunger barrel for movement between fuel supply positions alternately supplying certain ones of the pumping plungers separately with fuel during the pumping intake stroke of the respective plunger while blocking the return flow of fuel from other pumping plungers during the pumping stroke of the respective pumping plunger, and vice versa, as a function of the position of the distributor plunger, the pumping and distribution plungers all being adapted to be reciprocated in timed relationship to one another by a common engine driven camshaft, each of the plunger barrels defining a fuel chamber at one end for pressurization of the fuel in the pumping plunger chamber during the plunger pumping stroke and for the intake of fuel thereto during the return intake stroke of the plunger, a number of open/closed fuel spill control valve means associated with and equal in number to the distribution plungers, passage means connecting fuel from the distribution plunger fuel chambers to each of the pumping plunger chambers past the spill valve means and back again through the fuel distribution plungers to the source, and electromagnet means operable selectively in timed relationship to reciprocatory movement of the plungers to open and close the spill valve means to control the return of fuel to the source and the pressurization of fuel in the pumping plunger chambers.

4,497,300

FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kimiomi Maruyama, Yokohama, and Yasuo Nakajima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 101,548, Dec. 7, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,157
Claims priority, application Japan, Dec. 13, 1978, 53-154479
Int. Cl.³ F02M *51/06, 55/02*
U.S. Cl. 123—463 **26 Claims**



1. A fuel supply control system for a single-point injection internal combustion engine having an intake manifold and including a fuel injection valve connected to a fuel source, an electronic control circuit for controlling opening and closing of said fuel injection valve in accordance with engine driving conditions as detected by sensors for detecting various engine control parameters, and a fuel pressure control means for controlling a fuel pressure of fuel at said fuel injection valve as a function of a vacuum in the intake manifold;

said fuel pressure control means including a vacuum responsive valve means for varying the fuel pressure at the fuel injection valve as a function of engine load, said function varying at a greater rate than the rate of variation of intake vacuum with engine load.

4. A method for controlling fuel pressure at a fuel injection valve in a single point fuel injection internal combustion engine having a fuel supply system for supplying fuel in a controlled amount in synchronism with a spark ignition effected in the engine, said fuel supply system including a control system for determining a fuel amount to be supplied to an induction passage and for controlling said fuel injection valve, said method comprising:

determining a load condition of the engine; and

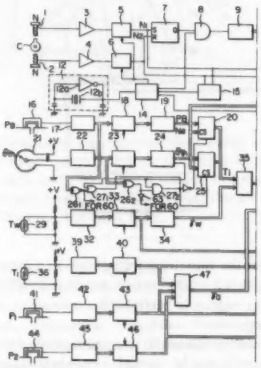
controlling fuel pressure at said fuel injection valve with a fuel pressure regulator means depending upon said engine load condition whereby the fuel pressure at said fuel injection valve is increased at a rate substantially larger than a determined increasing rate of engine load when engine load is increasing, and whereby a pressure difference between the fuel pressure at said injection valve and intake manifold absolute value is increased when the engine load is increased.

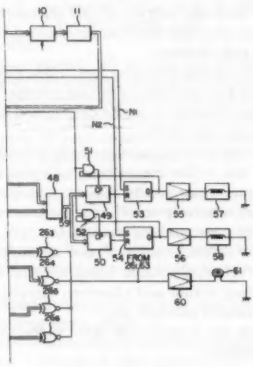
4,497,301

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, INCLUDING MEANS FOR DETECTING ENGINE OPERATING CONDITION PARAMETERS

Kazuo Inoue, Nerima, and Tetsuo Yamagata, Bunkyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,360
Claims priority, application Japan, Feb. 20, 1981, 56-23175
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—486 **18 Claims**





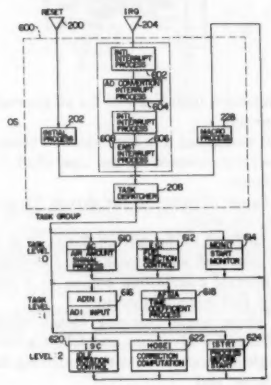
1. A fuel injection control system of the type electronically processing data indicative of a fuel quantity being injected into an internal combustion engine including an intake pipe and a throttle valve arranged in said intake pipe, in dependence upon parameters representative of operating condition of said engine, to obtain an electrical control signal corresponding to the value of processed data, and injecting a quantity of fuel determined by said electrical control signal into said engine, said system comprising: means for detecting a first parameter indicative of the rotational speed of said engine; means for detecting a second parameter indicative of the opening of said throttle valve; means for detecting a third parameter indicative of pressure in said intake pipe at a zone downstream of said throttle valve; means for detecting a fourth parameter indicative of the temperature of said engine; means for generating first data indicative of a basic fuel injection quantity, as a function of a combination of detected values of said first and second parameters; means for generating second data indicative of a basic fuel injection quantity, as a function of a combination of detected values of said first and third parameters; means for causing said second data generating means to generate said second basic fuel injection quantity data when an output value of said second parameter detecting means lies below a predetermined value, and causing said first data generating means to generate said first basic fuel injection quantity data when said output value lies above said predetermined value; means for generating a coefficient for correction of the value of said first or second basic fuel injection quantity data as a function of output of said fourth parameter detecting means; means for correcting the value of first or second basic fuel injection quantity data selectively generated by said first data generating means or said second data generating means, by an amount corresponding to a value of said correction coefficient generated by said correction coefficient generating means; means for generating said electrical control signal indicative of a desired fuel injection quantity corresponding to corrected data obtained by said correcting means; and means for setting the value of said correction coefficient to a value corresponding to a predetermined value of said fourth parameter which falls within a range within which the value of said fourth parameter can vary so long as said engine normally operates, when said fourth parameter detecting means generates an output value lying outside a range within which the output value of said fourth parameter detecting means can vary during normal operation of said engine.

4,497,302

FUEL CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, and Matsuo Amano, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1983, Ser. No. 471,127
Claims priority, application Japan, Mar. 3, 1982, 47-32361
Int. Cl.³ F02P *3/00*; F02B *3/00*
U.S. Cl. 123—489 **7 Claims**



1. A fuel control apparatus for an internal combustion engine, the fuel control apparatus comprising:

means for injecting fuel into an intake path of an internal combustion engine, the injected fuel being transported through said intake path and supplied into at least one combustion chamber of the engine;

means for detecting at least one operating condition of said engine to produce an output signal representing the engine operating condition;

means responsive to the output signal of said detecting means, for calculating a fuel amount to be injected by said fuel injection means;

means responsive to the output signal of said detecting means for calculating a dead time which corresponds

substantially to a transport time of the injected fuel to said at least one combustion chamber of said engine; and

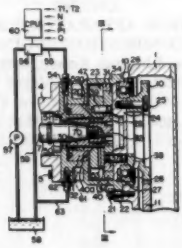
means connected to said fuel injection means, said fuel amount calculating means and said dead time calculating means for altering the beginning time of fuel injection by said fuel injection means in accordance with the dead time and the fuel amount, in order that substantially all of the injected fuel can be supplied into said at least one combustion chamber of said engine.

4,497,303

FUEL INJECTION TIMING DEVICE FOR INTERNAL COMBUSTION ENGINES

Fumiaki Murayama, and Shizuo Handa, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 10, 1982, Ser. No. 448,438
Claims priority, application Japan, Dec. 11, 1981, 56-199758
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—501 **11 Claims**



1. A fuel injection timing device for an internal combustion engine, comprising:

a cam shaft connected to a fuel injection pump;

a driven section coupled to the cam shaft and having a driven flange;

a driving flange adjacent to the driven flange and coaxial with the cam shaft;

a driven gear fixed to the driving flange so as to be coaxial with the cam shaft and in mesh with a driving gear driven by the internal combustion engine in a cylinder block facing the fuel injuection pump;

cam shaft phase angle changing means mounted on the driving flange for advancing and delaying the cam shaft in phase angle in cooperation with the driving flange and the driven flange; and

a casing containing and carrying the driven section, the driving flange, and the cam shaft phase angle changing means and having two ends, one of which is supported by the fuel injection pump and the other of which supports the driving flange and is supported by the cylinder block; wherein

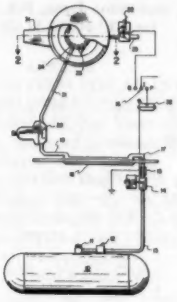
said cam shaft phase angle changing means includes slider means movable by a piston reciprocable in said casing in the radial directions of the driven flange, and eccentric cam means for advancing and delaying, in cooperation with the slider means, the driven flange and the driving flange, and cam shaft in phase angle in accordance with the position of the slider means relative to the driven flange.

4,497,304

FUEL AND AIR MIXING APPARATUS

Reginald Wintrell, and Vaughn R. Anderson, both of Orem, Utah, assignors to Dual Fuels Associates Corporation, Orem, Utah

Filed Apr. 11, 1980, Ser. No. 139,572
Int. Cl.³ F02M *21/02*
U.S. Cl. 123—527 **32 Claims**



1. Apparatus for blending a combustion mixture of fuel and air, and introducing said mixture into the manifold of an internal combustion engine in response to operation of an accelerator, comprising:

a mixing chamber mounted in association with said manifold to sense changes in pressure beneath said chamber in response to operation of said accelerator, and including:

air supply means, including air orifice means in communication with the interior of said chamber to deliver air into said chamber at a rate determined by the pressure within said chamber,

fuel supply means, including fuel orifice means in communication with the interior of said chamber to deliver fuel into said chamber at a rate determined by the pressure within said chamber,

the flow-through capacities of said air orifice means and said fuel orifice means being selected to provide the volume requirements of said manifold and proportioned relatively to effect a predetermined approximately constant area equivalence ratio, and

the flow characteristics of said air supply means and said fuel supply means being selected to effect rapid blending within said chamber, thereby to produce a combustion mixture, and

port means for transferring said combustion mixture to said manifold.

4,497,305

COLD-START BOOSTING DEVICE OF AUTOMOTIVE ENGINE

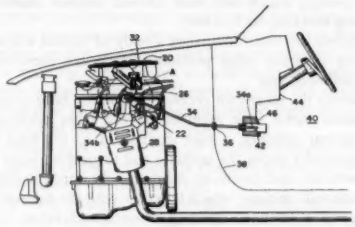
Masuo Ozawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 8, 1983, Ser. No. 549,749
Claims priority, application Japan, Dec. 1, 1982, 57-209297
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **11 Claims**

1. In a hot air intake system of an internal combustion engine having an air inlet tube through which air to be fed to the engine proper passes and an exhaust member through which hot combusted gas from the engine proper passes before discharging to the open air, said air inlet tube having a first opening for ambient air and a second opening for hot air, a hot air passage for transmitting heated air from said exhaust member to the second opening, and means for varying the opening degree of the first opening relative to that of the second open-

ing in accordance with the temperature of the ambient air, the improvement comprising:

a heat pipe having a heat absorbing end and a heat emitting end mounted in a position exposed to the air flowing through the interior of said hot air passage; and



a portable thermal storage device detachably connectable in heat exchange relationship to said heat absorbing end of the heat pipe and providing a source of heat accumulated in the thermal storage device to heat the air in said hot air passage through the heat pipe.

4,497,306

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kyugo Hamai, Yokosuka; Yasuhiko Nakagawa, Kamakura; Meroji Nakai, Yokosuka, and Ryusaburo Inoue, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 30, 1982, Ser. No. 403,858

Claims priority, application Japan, Aug. 3, 1981, 56-120652

Int. Cl.[3] F02D *3/08*

U.S. Cl. 123—620 **8 Claims**

1. An ignition system for an internal combustion engine having a plurality of cylinders and a DC voltage source and at least one engine operating condition detector for generating a signal indicative of an engine operating condition, comprising:

(a) a spark plug for each of said cylinders, each of said spark plugs having a spark gap defined by a first electrode and a second grounded electrode;

(b) an ignition coil for each of said spark plugs, each of said ignition coils having a primary winding and secondary winding, one end of the secondary winding being directly connected to the first electrode of said spark plug and one end of said primary winding being biased by a DC voltage;

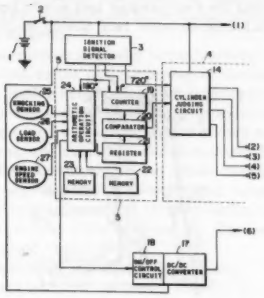
(c) an insulated housing for each of said ignition coils and corresponding spark plugs;

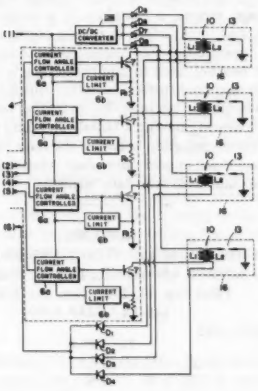
(d) a voltage boosting means connected to another end of the secondary windings of said ignition coils for applying a first boosted voltage to the spark gap of each of said spark plugs, said voltage boosting means including a control means responsive to an engine operating condition for selectively applying or interrupting said first boosted voltage;

(e) an ignition signal detector responsive to the rotation of said engine to generate a first signal having a period determined in accordance with the number of engine cylinders, and a second signal comprising a series of pulses having a pulse width which corresponds to an increment of engine rotation, and a third signal having a period which corresponds to one engine cycle;

(f) an ignition advance angle controller responsive to said ignition signal detector and said engine operating condition detector for determining an optimum spark timing angle relative to a top dead center position of a piston of each engine cylinder and for producing an ignition pulse signal whenever the number of pulses of the second signal reaches a predetermined optimum engine spark timing angle and for producing a control signal to said control means to enable said voltage boosting means to output said first boosted voltage to the secondary windings and thereby to the spark gaps in response to said engine operating condition; and

(g) an igniting means responsive to said ignition advance angle controller and ignition signal detector for sequencially designating which of said plurality of engine cylinders to ignite according to a predetermined ignition order and for generating ignition start signals for selectively interrupting current flow through the primary winding of the ignition coil corresponding to said engine cylinder to be ignited in response to the ignition pulse signal from said ignition advance angle controller to thereby produce a high surge voltage at the corresponding secondary winding.





4,497,307

INTEGRAL ROCKER ARM HYDRAULIC LIFTER AND BEARING ASSEMBLY

Michael S. Paar, Battle Creek, and Christopher I. McCarthy, Grandville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

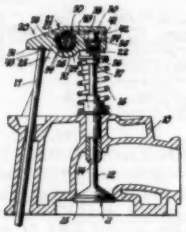
Filed Feb. 3, 1984, Ser. No. 576,721

Int. Cl.[3] F01L *1/18*

U.S. Cl. 123—90.33 **3 Claims**

1. A rocker arm assembly for use in the valve train of an internal combustion engine of the type having a fixed rocker shaft for supporting at least one rocker arm, the rocker shaft having an axial passage adapted to be in continuous communication with the pressurized lubricant supply of the engine and

at least one radial riser passage extending from the axial passage; said rocker arm assembly including a rocker arm having a central pivot portion with a bearing receiving bore extending transversely therethrough and opposed drive and driven arms extending from said pivot portion, said drive arm having a lash adjuster socket therein with a passage means extending from said socket to said bore; a hydraulic lash adjuster operatively positioned in said socket; and, a needle bearing and oil feed means operatively positioned in said bore and encircling the rocker shaft over the riser passage, said needle bearing and oil feed means including an outer race having an inner cylinder



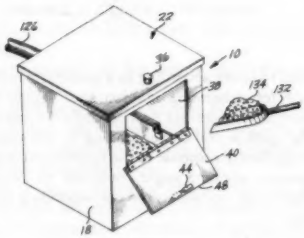
race surface and a radial aperture in fluid communication with said passage means, a plurality of needles operatively positioned on said race surface in rolling contact with a portion of the shaft opposite the riser passage therein and, a semi-cylindrical sleeve bearing fixed to said outer race in operative engagement with said race surface between opposite end ones of said needles whereby to encircle the remaining portion of the shaft, said sleeve bearing having a radial extending port means effecting flow communication between the riser passage in the shaft and said aperture in said outer race whereby lubricant can be supplied to said hydraulic lash adjuster.

4,497,308

ASH RECEPTACLE WITH DUST ELIMINATOR

Robert R. Johnson, 424-4th SE., Pacific, Wash. 98047

Filed Sep. 27, 1983, Ser. No. 536,943
Int. Cl.³ F23J *1/00*
U.S. Cl. 126—242 **5 Claims**



1. An ash collecting receptacle having wall means designed to form a substantially closed chamber having a side located inlet opening;

an ash collector pan in a lower portion of the receptacle, said pan having a bottom and sidewalls, and a handle;

said receptacle including a sidewall opening spaced from the inlet opening;

means mounting a filter member over the inside of said sidewall opening;

means on the opposite side of the opening for receiving a suction hose leading from a conventional vacuum cleaner;

whereby the vacuum cleaner can be turned on and used for causing airflow to the filter, so that during ash introduction through the inlet opening into the ash pan within the receptacle, the ash dust will rise and be influenced by the suction provided by the vacuum cleaner towards the filter member, and will be collected by the filter member or drawn into the vacuum cleaner;

wherein the means mounting a filter member comprises means on diametrically opposite sides of the sidewall opening which with said sidewall defines channels opening towards each other;

wherein the filter comprises a body of fibrous material having opposite edge portions which are received in the channels; and

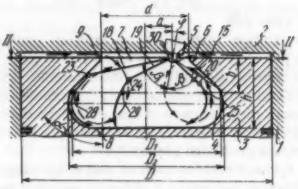
wherein the means for receiving a suction hose comprising a sheet metal base member having edge portions and a central opening, a tube connected to the base member generally about the opening and projecting from the base member, and means on diametrically opposite sides of the sidewall opening which together with the sidewall defines a pair of channels opening towards each other, with edge portions of the base member being receivable in said channels.

4,497,309

INTERNAL COMBUSTION ENGINE

Nikolai N. Ivanchenko; Sergei S. Sokolov, both of Leningrad; Anatoly A. Lazarev; Evgeny M. Kataev, both of Chelyabinsk; Arkady A. Glazunov, and Evgeny S. Gorbunov, both of Leningrad, all of U.S.S.R., assignors to Tsentralny Iauchno-Issledovatelsky Dizelny Institut, Leningrad, U.S.S.R.

PCT No. PCT/SU80/00169, § 371 Date May 12, 1982, § 102(e) Date May 12, 1982, PCT Pub. No. WO82/01218, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 29, 1980, Ser. No. 380,931
Int. Cl.³ F02B *23/06*
U.S. Cl. 123—276 **6 Claims**



1. A diesel engine, comprising:

at least one cylinder;

a cylinder head at the top of said cylinder, said cylinder head having air inlet means for letting air into said cylinder;

an injection nozzle for injecting fuel jets into the top of said cylinder; and

a piston having a combustion chamber for receiving said fuel jets when said piston is adjacent said cylinder head, said combustion chamber having a frustoconical side surface extending from a relatively narrow open throat at the top of said chamber to a transition region adjacent a relatively wide bottom surface of the chamber, said throat having a peripheral edge,

said frustoconical side surface tapering in the direction of the throat at an angle of 30°–60° to the cylinder axis,

the diameter of said throat being equal to 0.32–0.37 times the cylinder inside diameter,

the transition region from said frustoconical side surface of said bottom surface of the combustion chamber being smooth along a radius thereof,

the diameter D_1 of the combustion chamber at a distance b from said throat edge equal to half the height h of the combustion chamber between the closest plane of said throat edge and said bottom surface being less than the maximum diameter D_2 of the transition region,

said injection nozzle being mounted in an inclined position in the cylinder head relative to the cylinder axis, said injection nozzle being positioned relatively close to the throat edge and relatively remote from the center of said throat, at a position permitting penetration of fuel jets from said nozzle into said combustion chamber through the throat thereof,

said injection nozzle having at least four fuel jet channels for directing fuel jets onto the side surface of the combustion chamber, so that mixing is effected when the fuel jets are acted upon by radial vortex streams of an air charge appearing in the combustion chamber during the motion of the piston at the end of the compression cycle and at the beginning of the expansion cycle,

the extended axes of said fuel jet channels intersecting the side surface of the combustion chamber above the portion thereof having the diameter D_1,

said extended channel axes forming different angles with each other and dividing each horizontal section of said side surface into a plurality of parts,

the angle between the projections of the extended channel axes of a first pair of adjacent channels for supply of fuel onto the closest part of the combustion chamber side surface to said nozzle being 1.8 to 2.2 times the angle between the projections of the extended channel axes of any other pair of adjacent channels for supply of fuel onto the portion of the combustion chamber side surface which is most remote from said nozzle,

said channel axes being inclined at an angle β from the longitudinal axis of said nozzle and intersecting at a point lying substantially in the plane of the upper edge of said throat when the piston is in the top dead center position thereof, said channel axes being generatrices of a conical surface with a vertex angle 2β,

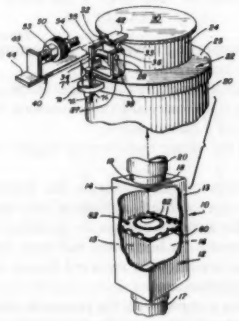
said injection nozzle being inclined from a vertical axis parallel to the cylinder axis by an angle ϕ, said frustoconical side surface intersecting the side surface of the combustion chamber (i) on the side of the throat closest to the nozzle at a depth of $\frac{1}{3}b$ from the throat edge, and (ii) on the side of the edge of said throat most remote from the nozzle at a depth of $\frac{1}{3}b$, where b is equal to half the height of the combustion chamber between the plane of said upper throat edge and said bottom surface.

4,497,310

FLUE BOX WITH ADJUSTABLE COUNTERBALANCE CAP

Craig D. Funke, Chicago, Ill., assignor to NRG Systems, Inc., Chicago, Ill.

Filed Feb. 13, 1984, Ser. No. 579,259
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—292 **3 Claims**



1. A flue box assembly of the type for use in conjunction with a heating plant having a housing with an interior diametric opening substantially greater than the exhaust gas inlet to and outlet from the interior of the housing, the housing having an inlet opening for flue gases to enter the housing and an outlet opening for flue gases under pressure to exit from the housing, and the housing including damper means pivotally mounted therein to permit movement between an open position and a closed position, the damper means further having a flue opening positioned therein, the flue opening being diametrically smaller than either the inlet or the outlet openings of the housing, the improvemnt comprising in combination,

a cap pivotally mounted on said housing adjacent the outlet opening thereof,

said cap adapted to pivotally move between a closed position occluding the outlet opening of the housing and an open position whereby the outlet opening is unobstructed,

said cap further including a holding bar mounted on said cap in juxtaposition with respect to the pivotal mounting point of said cap and extending radially outwardly therefrom,

and adjustable counterbalancing means associated with said cap for adjusting the relative pressure necessary to move said cap into an open and closed position respectively in relation to the force exerted by flue gases escaping through said outlet opening,

said counterbalancing means comprising a threaded rod associated with and extending radially outwardly from a pivotal mounting point of said cap,

said threaded rod including a threaded weight, threadedly carried thereon thereby to be threadedly movable along the length of said rod such that said weight may be moved toward and away from said cap thereby to adjust the relative pressure necessary to move said cap into an open and closed position respectively,

said threaded rod being mounted on and carried by said holding bar having said threaded weight threadedly secured thereon for movement along the length of said threaded rod,

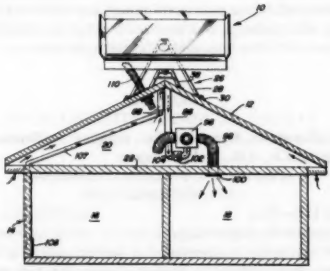
whereby said cap is adapted to pivotally move to an open position in response to pressure exerted thereagainst by the flue gases exiting through the housing outlet opening, said counterbalancing means permitting the adjustment of the pressure exerted by said cap against the flow of flue gases thereby to adjust the degree by which said cap will open.

4,497,311

SUN TRACKING SOLAR AIR HEATING SYSTEM

Frank J. Brandenburg, Jr., Rte. 1, Box 487 S, Ashland, Va. 23005

Filed Aug. 26, 1982, Ser. No. 412,525
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **10 Claims**



9. A sun tracking solar air heating system for buildings having a roof and an enclosed space below the roof, said heating system comprising a solar collector, means mounting the solar collector on the roof in inclined relation for facing the sun, means connected to the solar collector for pivoting the

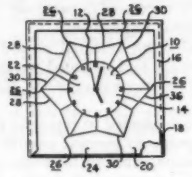
solar collector about a vertically inclined axis relative to the horizon for tracking the sun across the sky from sun up to sundown and returning the solar collector to an original position during the nighttime, and a flexible duct system connected with the solar collector and extending through the roof for communication with the space to be heated, said flexible duct system being connected to the solar collector and the roof in a manner to maintain the waterproof integrity of the roof and solar collector, said solar collector being of box-like configuration and provided with an open top closed by glazing material to provide an air space within the collector and a plurality of screen mesh panels oriented in spaced relation and positioned interiorly of the solar collector for storing heat within the collector and increasing the temperature of the air space within the collector, said flexible duct system including an enlarged flexible duct, a pair of smaller flexible ducts disposed within the larger duct for circulation of warm air downwardly from the solar collector and upward movement of cold air into the solar collector.

4,497,312

BREATHING AND RELAXATION PROGRAMS TO AID CHILDBIRTH

Brian K. Byrd, P.O. Box 169, Lehigh Acres, Fla. 33936

Filed Nov. 23, 1983, Ser. No. 554,536
Int. Cl.³ G04B *19/06*
U.S. Cl. 128—1 R **7 Claims**



1. A breathing and relaxation timing and training device to assist an expectant mother to relax and cooperate with the normal bodily functions including the contractions that are brought into action as the time for child delivery approaches, comprising a timepiece having a dial and a second hand movable relative to the dial, a frame superimposed over the dial and having a channeled frame to successively receive one of a series of chart overlays, each of the chart overlays having a series of time related intervals marked thereon to indicate a specific time related breathing and relaxation pattern, the chart overlays being so proportioned that when a chart overlay is positioned in the channeled frame the dial of the timepiece and the position of the second hand relative to the markings of the dial and the markings of the chart overlay are visible to indicate a specific breathing and relaxation pattern.

4,497,313

FOOT BATH

Tadashi Kurosawa, Urawa, Japan, assignor to Tensho Electric Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,602
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—24.1 **5 Claims**

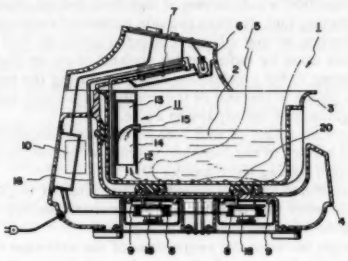
1. A foot bath comprising:

a bath body for containing hot water, which a foot is to enter, said bath body having a cover having an opening therein;

far infrared ray radiating means, provided in said cover, for radiating far infrared rays to the foot and the hot water, said radiating means including a ceramic layer in the cover and heating means for heating said ceramic layer to produce said far infrared rays;

vibrating means, provided under said bath body, for providing vibration to the foot in said bath body;

and means for generating a jet water stream in said bath body, said generating means, including a pump connected to said vibrating means so as to be driven by said vibrating means, an air transferring pipe connecting said pump and



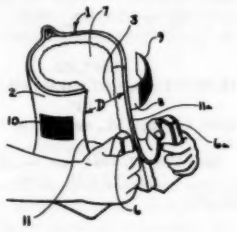
the bottom of said bath body to transfer air from said pump to the bottom of said bath body while the air is being heated by said infrared rays, and a nozzle provided in said bath body to mix the air heated by said infrared rays with the hot water in said bath body to eject the jet water stream as a mixture of heated air and hot water at the surface of the hot water in said bath body.

4,497,314

ANKLE SUPPORTING DEVICE FOR INVERTED POSTURE

Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Duarte, Calif.

Filed Dec. 2, 1982, Ser. No. 446,482
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 **8 Claims**



1. An ankle-supporting device for supporting a human in inverted posture comprising,

a tubular clamp of generally cylindrical shape, configured of substantially rigid material so as to conform to the approximate shape of a human ankle;

a longitudinal slit along the anterior length of the tubular clamp;

an integral extension projecting in the anterior direction from each edge of the longitudinal slit, each extension including a hook means open in the proximal direction and adapted to receive a horizontal bar such that said hook means are secured against outward lateral movement by said horizontal bar; and

a flexure portion integral with the posterior side of the tubular clamp, extending longitudinally, and having sufficient resilience to permit the hook means to be separated a distance at least the width of the human ankle for receiving the ankle into the tubular clamp.

4,497,315

ORTHOPEDIC DEVICE FOR TREATING HIP DISPLEASURE AND HIP LUXATION

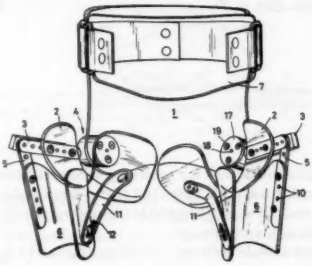
Ewald Fettweis, Aachen, and Wolfgang Kindler, Cologne, both of Fed. Rep. of Germany, assignors to Otto Bock Orthopaedische Industrie KG, Duderstadt, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,661

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113981

Int. Cl.³ A61H *5/02*

U.S. Cl. 128—78 **13 Claims**



1. An orthopedic device for treating hip displeasure and hip luxation, comprising

a pelvic basket;

two thigh holders;

two thigh-guiding members having two ends, one end of each of said thigh guiding members being pivotally connected with said pelvic basket, whereas the other end of the same is connected with a respective one of said thigh holders;

two joints each provided in the region of a natural hip joint for providing said pivotal connection between said pelvic basket and a respective one of said thigh-guiding members and formed as a universal joint, each of said joints having a moveable joint part which can be arrested in any angular position; and

a further universal joint provided between the moveable joint part of each of said first-mentioned universal joints and a respective one of said thigh-guiding members, and having an axis.

4,497,316

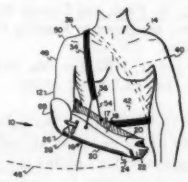
CANTILEVERED SUSPENSION SLING

James A. Lilla, 4431 Ashton Dr., Sacramento, Calif. 95825

Filed Jul. 1, 1982, Ser. No. 394,445

Int. Cl.³ A61F *5/10*

U.S. Cl. 128—94 **4 Claims**



1. A method of supporting an arm of a patient, comprising the steps of:

forming a semi-rigid arm support member into a trough having a pair of lateral side portions positioned on each side of the patient's forearm;

partially encircling the patient's forearm with the trough;

placing the elbow and distal end of the patient's arm within the trough;

coupling one end of a strap to the middle portion of the trough and coupling the other end of the strap to the trough near the patient's elbow;

extending the strap over the ipsilateral shoulder of the patient, diagonally downwardly across the patient's back, and across the front of the patient's body, and adjusting the length of the strap to suspend the trough from the strap and elevate the patient's forearm to a predetermined position while permitting lateral movement of the distal end of the patient's forearm and rotation of the patient's upper arm at the shoulder joint.

4,497,317

VAGINAL DEVICE FOR CONTRACEPTIVE CONTROL

Enrica Boschetti, Via Melchiorre Gioia, 171, 20125 Milano, Italy

Filed Nov. 22, 1982, Ser. No. 443,744

Claims priority, application Italy, Dec. 9, 1981, 25486 A/81

Int. Cl.³ A61F *5/46*

U.S. Cl. 128—127 **14 Claims**

1. A contraceptive vaginal device comprising a substantially elastic ring of a generally circular shape and having a general plane; and a hollow elastic container made of expandable fabric and having walls impregnated with a spermicide or contraceptive medicinal substance, said ring being insertable into said container to stretch its walls and to shape it into a vaginal barrier, said container being of a substantially ellipsoid shape and being formed with a first opening for receiving said ring and including means for closing said opening after said ring has been inserted into said container, said container having a larger axis and a smaller axis and being adapted to receive said ring with its general plane lying along said larger axis or along said smaller axis, whereby said container and said ring are geometrically adjustable to each other and form in assembly said vaginal barrier of a cup-like shape having a periphery substantially coinciding with the periphery of said ring so that two walls of said container are superpositioned one on another, said container being provided with a tubular collar extended along said first opening, said closing means being a yarn received in said tubular collar, said yarn having free ends which are pulled and knotted by a user to close said first opening after said ring has been inserted into said container.

4,497,318

ESOPHAGEAL OBTURATOR AIRWAY

T. A. Donmichael, 2108/2110 Trustun Ave., Bakersfield, Calif. 93301

Filed Apr. 9, 1982, Ser. No. 366,913

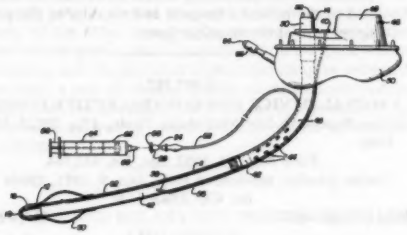
Int. Cl.³ A61M *16/00*

U.S. Cl. 128—202.28 **8 Claims**

1. A medical device for use during cardiopulmonary resuscitation and similar medical procedures, comprising:

(a) a flexible, elongated conduit configured for insertion into the esophagus and having a cross-sectional area approximately the same as the cross-sectional area of a normal esophagus, a proximal end and a distal end, said conduit further having an expandable element joined to said conduit adjacent said distal end, means for expanding said expandable element thereby forming a seal isolating the

stomach of a patient from the lungs, a solid sealing plug disposed in said conduit and dividing said conduit into first and second sections, with said first section, having a length approximately twice the length of said second section, adjacent said distal end, said sealing plug preventing fluid from flowing thereacross, a tube means, having a diameter substantially smaller than said conduit, for venting said first section, said tube means being externally joined to and having one end extending from the proximal end of said conduit along the length of said second section



and a second end extending through the wall of said conduit such that it is in flow communication with said first section, and a series of openings disposed in said second section and located so as to enable air or other fluid to flow between said second section and the patient's lungs; and

(b) a face mask having means for engaging said proximal end of said conduit and said one end of said tube means wherein said engaging means communicates said conduit and said tube means to the exterior of said face mask.

4,497,319

LASER IRRADIATING APPARATUS

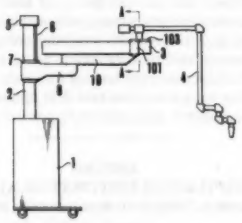
Kunio Sekine, Tokyo; Michihiro Kaneda; Kiichiro Shinokura, both of Kanagawa; Norihiro Suenaga, Tokyo, and Nobuyuki Suenaga, Kanagawa, all of Japan, assignors to Nippon Infrared Industries Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,089

Claims priority, application Japan, Nov. 19, 1981, 56-172677[U]

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **1 Claim**



1. A laser irradiating apparatus comprising: a power supply box, a vertical shaft arranged on said power supply box, a first arm disposed horizontally with respect to the vertical shaft and slidably movable vertically thereof and rotatably disposed thereabout, a second arm rotatably mounted to the first arm and including an upper surface and a head tip at one end thereof, a laser head having a lower side and an upper side, said lower side supported and fixed onto the upper surface of said second arm, a multi-joint articulated arm light guide provided at the tip of the laser head to guide the laser beam generated in said laser head to a desired target, a support arm provided at the head tip of the second arm, and a support plate fixed by said support arm and covering the upper side of the tip portion of the laser head, said support plate fixedly supporting the light guide thereon.

4,497,320

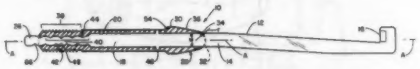
SURGICAL BLADE UNIT

James E. Nicholson, Lincoln, and James P. Ryan, Milton, both of Mass., assignors to Rudolph Beaver, Inc., Waltham, Mass.

Filed Feb. 14, 1983, Ser. No. 466,203

Int. Cl.³ A61B *17/32*

U.S. Cl. 128—305 **11 Claims**



1. A surgical blade unit for receiving substantial cutting load and adapted for use with a selected shaft-form handle that has, at its distal end, an axially aligned blade-unit receiving opening, said blade unit comprising:

(a) a metal blade defining a working edge and a load-transmitting, axially elongated metal support shank extending from said edge, and

(b) an intermediate load-transferring member of synthetic resin permanently molded about a proximal portion of said shank,

the distal extremity of said intermediate member being spaced proximally from said working edge leaving said blade and a substantial length of the distal portion of said shank exposed,

a proximal portion of said intermediate member defining an attachment fitting adapted to engage in load-transferring relationship with said handle,

the proximal portion of said shank extending through the intermediate member substantially into the region of said attachment fitting and being permanently embedded within said intermediate molded member to define an elongated, load-transferring interface therewith,

said intermediate member being comprised of synthetic resin that has substantial tensile and shear strength and being constructed and arranged to receive via said attachment fitting the surgeon's forces on said handle, and to receive via said substantial load-transferring interface, forces from said proximal end of said shank attributable to the resistance encountered by said metal blade, the substance of said intermediate member adapted to transfer said surgeon's forces to overcome said resistance forces while maintaining said blade in fixed relationship to said handle.

4,497,321

EAR TAG APPLICATORS

D. Michael Fearing, St. Paul, and George N. Johnson, Stillwater, both of Minn., assignors to Fearing Manufacturing Co., Inc., St. Paul, Minn.

Filed Jun. 1, 1982, Ser. No. 383,573

Int. Cl.³ A01K *11/00*

U.S. Cl. 128—330 **5 Claims**

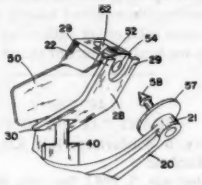
1. An applicator for applying a first portion of an ear tag having a sharp point to the ear of an animal comprising:

a first jaw having means for holding the first portion of an ear tag having a sharp point for piercing through the ear of an animal;

a second jaw, said second jaw having a blunting area for blunting the sharp point on the first portion of the ear tag, said second jaw having an angled pivotal member for holding a second portion of an ear tag, said angled pivotal member having means thereon for holding the second portion of an ear tag in said second jaw and said angled

pivotal member being spaced a distance from said second jaw so that a channel large enough to accomodate a portion of said second portion of an ear tag is formed between said second jaw and said angled pivotal member for holding the second portion of an ear tag in a bent position along said second jaw to thereby permit said second jaw and said second portion of an ear tag to be inserted into the ear of an animal;

means for opening and closing said first jaw and said second jaw, said first jaw and said second jaw having an open



position so that the ear of an animal can be inserted between said first jaw and said second jaw;

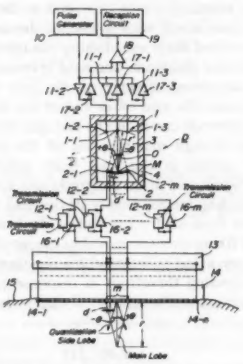
said first jaw and said second jaw having a closed position so that when said first jaw and said second jaw are moved from the open position to the closed position said means for holding the first portion of an ear tag forces the sharp point of the first portion of the ear tag through the animal's ear and into the blunting area to thereby stop further penetration of the ear tag and to blunt the sharp point of the ear tag.

4,497,322

ULTRASONIC DETECTION APPARATUS

Tatsuo Nagasaki, Musashino, Japan, assignor to Olympus Optical Co. Limited, Japan

Filed Jun. 3, 1982, Ser. No. 384,497
Claims priority, application Japan, Jun. 5, 1981, 56-85616
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **6 Claims**



1. In an ultrasonic detection apparatus for forming a tomographic image of an object comprising

means for generating driving pulses;

means for delaying the driving pulses by predetermined delay times to produce delayed driving pulses;

probe means having an array of a plurality of electroacoustic oscillator elements arranged at a given pitch for generating focused ultrasonic waves in response to said delayed driving pulses into said object and for receiving ultrasonic waves reflected by the object to produce electric signals; and

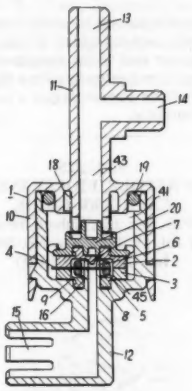
display means for receiving said electric signals by means of said delaying means to display a tomographic image of the object, the improvement wherein said delaying means comprises a surface wave propagating medium, a first electroacoustic transducer including at least one main surface wave electrode applied on a surface of the propagating medium and a plurality of sub surface wave electrodes provided on the same surface of the propagating medium, and a second electroacoustic transducer including an array of surface wave electrodes provided on the same surface of the propagating medium, said main and sub surface wave electrodes of the first electroacoustic transducer being arranged along an arc having a center situating at a middle point of the second electroacoustic transducer and said sub surface wave electrodes being so arranged that lines connecting respective sub surface wave electrodes with said middle point make, with respect to a line connecting the main surface wave electrode with said middle point, angles which are equal to angles between a main lobe and quantization side lobes of the ultrasonic wave beam emitted from said probe means.

4,497,323

EXHAUST VALVE HAVING A CONSTANT BLEED RATE

Masahiro Matsuura; Tsutomu Ichinomiya, and Hideaki Abe, all of Shiga, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Sep. 28, 1982, Ser. No. 425,914
Claims priority, application Japan, Nov. 14, 1981, 56-182876
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—685 **12 Claims**



1. An exhaust valve comprising a first passage for receiving a fluid to be exhausted, a second passage for exhausting said fluid, a pair of abutting plates interposed in a fluid flow path between said first and second passages, means for biassing said pair of plates into pressurized contact with each other at least in part by a pressurized fluid in said first passage, at least one of said plates being formed of a resilient material, and a gap-forming member interposed between said abutting plates and forming a gap between said plates which serves as a variable flow exhaust path between said first and second passages.

4,497,324

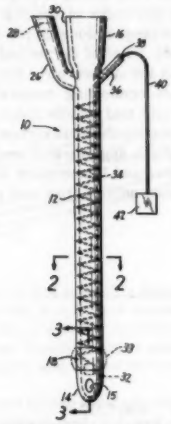
TEMPERATURE MONITORING CATHETER

Michael D. Sullivan, Glendale; Robert L. Murtfeldt, Redondo Beach, and Arthur R. Yelsey, Corona del Mar, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 3, 1983, Ser. No. 538,715

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—736 **21 Claims**



1. A temperature monitoring catheter, comprising:

an elongated shaft having a distal end, a proximal end and a wall portion defining a drainage lumen extending longitudinally through the shaft and opening through a drainage opening at the proximal end of the shaft;

temperature sensing means for determining temperature and converting such determined temperature to an electric signal, imbedded in the wall at the proximal end of the shaft; and

a bifilar electrical wire coil helically extending around the drainage lumen and imbedded in the wall of the shaft, connected at one end to the temperature sensing means and providing an end extending from the shaft at the distal end of the shaft for connecting to a power source and a temperature monitor.

4,497,325

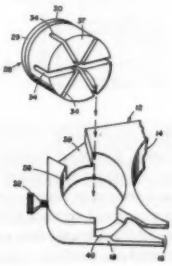
ULTRASOUND NEEDLE, BIOPSY INSTRUMENT OR CATHETER GUIDE

Victor J. Wedel, P.O. Box 182, Kalona, Iowa 52247

Filed Jul. 15, 1982, Ser. No. 398,623

Int. Cl.³ A61D *10/00*

U.S. Cl. 128—754 **7 Claims**



1. A device for use in connection with an ultrasound transducer for guiding medical instruments through the skin and into a selected body part of a patient, said device comprising a main body, attachment means on said main body providing for operative connection of the device to a transducer, said main body having a contact surface for engaging the skin of the patient in the area of the selected body part, said main body also having a cylindrical-shaped opening with the axis of the opening parallel to the plane of the contact surface, and a cylindrical-shaped guide member removably positioned in said cylindrical-shaped opening and turnable about said axis, said cylindrical-shaped guide member having a plurality of guide slots formed therein each along a diameter of said guide member to receive a medical instrument therein.

4,497,326

HEART PACING LEAD

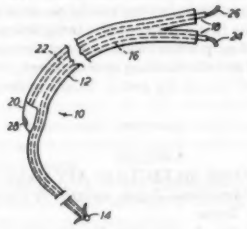
Paul V. L. Curry, 6 Windermere Rd., Kingston Vale, London SW15 3QP, England

Filed Apr. 5, 1982, Ser. No. 365,707

Claims priority, application United Kingdom, Apr. 6, 1981, 8110732; Jan. 29, 1982, 8202539

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—785 **6 Claims**



1. A transvenous heart pacing lead comprising an elongated lead body; a ventricular electrode mounted at one end of the lead body; terminal means provided at the other end of the body for connection with a pacing device; first conductor means in the lead body establishing electrical contact between said ventricular electrode and said terminal means; an atrial electrode supported directly on the lead body at a spaced location toward the said other end of the lead body such that the atrial electrode can in use be brought into contact with the atrial wall through manipulation of the lead body; second conductor means in the lead body establishing electrical contact between said atrial electrode and said terminal means; a bore extending longitudinally of the lead body enabling the introduction from said other end of the lead body of a guide wire; and a fixing element movably mounted in the atrial electrode between a first position within the electrode and a second position extending therefrom in response to manipulation of the guide wire to anchor the atrial electrode to the atrial wall.

4,497,327

COMBINE HARVESTER WITH ANGLED AXIAL THRESHER

Franz Hug; Franz Johler, both of Gottmadingen, and Reimar Franke, Dillingen, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,482

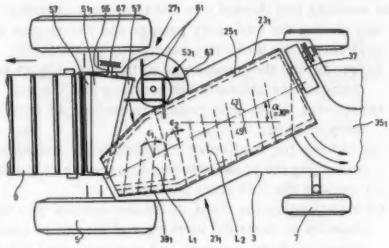
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135118

Int. Cl.³ A01F *12/10*

U.S. Cl. 130—27 T **35 Claims**

1. A movable combine harvester with axial thresher including a mowing apparatus, a conveyor connected thereto for the cut harvest product, a rotating threshing and separating drum

assembly defining an axis of rotation accommodated in a drum housing for axially threshing harvested product, and an inserting device for transferring the harvest product delivered by the conveyor into an inlet of said drum housing, wherein the rotation axis (**43**) of the threshing and separating drum assembly (**25**) is disposed in the horizontal plane at an acute angle to



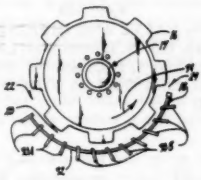
the longitudinal axis (**45**) of the combine harvester (**1**), the drum housing having at the forward end facing the conveyor (**9**), a tangential inlet (47_1) defined by a sidewall of the housing which serves as a guide wall (49_1), for the harvested crop extending to guide said crop from the conveyor (**9**), into said tangential inlet (47_1).

4,497,328

COMBINE CONCAVE

Arthur L. Alm, Rte. #1, Box 12, and Murry W. Schuler, Rte. #2, Box 66, both of Griswold, Iowa 51535

Filed Sep. 15, 1983, Ser. No. 532,373
Int. Cl.³ A01D *12/24*
U.S. Cl. 130—27 K **3 Claims**



1. In combination, a combine cylinder having an axis of rotation, and a concave closely spaced with respect to said cylinder, said concave having an intake end and a discharge end,

said concave comprising,

a plurality of elongated, generally arcuately shaped parallel support members,

a plurality of elongated bars mounted on said support members such that the longitudinal axes of said bars are generally perpendicular to said support members and parallel to the axis of rotation of said cylinder,

said bars being permanently rigidly fixed to said support members and being generally rectangular in cross section including relatively narrow inner and outer edges with the inner edge positioned adjacent a portion of said cylinder, and relatively wider oppositely facing side edges extending generally away from said inner edge and said cylinder,

said bars, adjacent at least the discharge end of said concave, having the outer edges thereof circumferentially offset relative to the inner edges thereof in a direction toward the discharge end of the concave so that the side edges thereof are disposed at an angle with respect to a radial line passing from the center of said cylinder through the longitudinal axis of the respective bars to facilitate the movement of grain between the bars and to minimize the resistance of said bars to the passage of grain therebetween, and

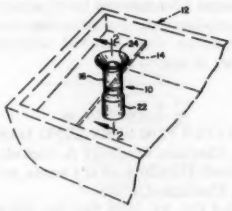
said inner edges of said bars projecting an equal distance inwardly from said support members toward said cylinder.

4,497,329

CIGARETTE SNUFFER

James L. O'Dell, 4711 SE. 88th Ave., Portland, Oreg.

Filed Jul. 21, 1982, Ser. No. 400,457
Int. Cl.³ A24F *19/14*
U.S. Cl. 131—235 R **4 Claims**



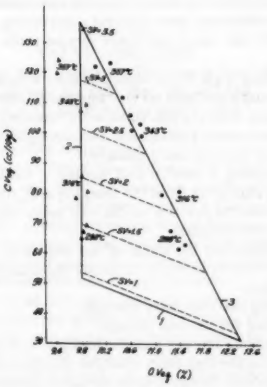
1. A cigarette snuffer for extinguishing a burning cigarette, comprising a substantially cylindrical tube internally dimensioned to snugly receive the cigarette, the tube including an internal circumferential ridge constricting the bore of the tube and dimensioned to compress the unburned material of the inserted cigarette.

4,497,330

PROCESS FOR INCREASING THE FILLING POWER OF TOBACCO

Joseph L. Banyasz, Richmond; Cassandra D. Owens, Petersburg; Elizabeth D. Mooz, Richmond; A. Clifton Lilly, Jr., Richmond; Peter Martin, Richmond; Henry B. Merritt, Richmond, and Bernard A. Semp, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,473
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **18 Claims**



1. A process for increasing the filling power of tobacco comprising heating the tobacco at elevated temperature while maintaining the OV and SV values of the tobacco substantially constant.

4,497,331

TOBACCO PRODUCT WITH HIGH FILLING POWER AND PROCESS OF MAKING SAME

William J. Nellen, West Hartford, Conn., assignor to TMCI, Inc., South Windsor, Conn.

Filed Aug. 11, 1982, Ser. No. 407,081
Int. Cl.³ A24B *3/14*
U.S. Cl. 131—353 **10 Claims**

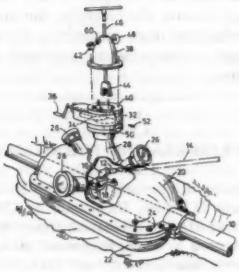
1. A tobacco laminate which has been threshed or shredded for use as a tobacco filler material for cigarettes and cigars and other tobacco products, the laminate comprising two plies of reconstituted tobacco sheet material wherein the plies are adhered together at spaced areas.

4,497,332

APPARATUS FOR SERVICING GAS LINES

John S. Sewell, Chatham; Frederick A. McColl, Brantford, and Peter M. Petkoff, Hamilton, all of Canada, assignors to Union Gas Limited, Chatham, Canada

Filed Feb. 24, 1984, Ser. No. 583,439
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—15 **2 Claims**



2. A method of servicing a pressurized gas main by interrupting and reestablishing the mechanical continuity of the pressurized gas conducting main without interrupting gas flow therethrough by the use of gas main service tools comprising the steps of:

(a) forming a gas tight work chamber around the main;

(b) forming a gas tight service tool entry chamber in communication with the gas tight work chamber through a service tool entry passage and also through a by-pass passage around the tool entry passage;

(c) providing a service tool having a working end and a shank extending from the working end, the shank extending from the exterior of the tool entry chamber and into the work chamber;

(d) manipulating the shank of the tool from the exterior of the tool entry chamber to locate the tool in the tool entry chamber;

(e) closing the tool entry passage;

(f) opening the by-pass passage;

(g) permitting the gas main to leak gas at a slow rate;

(h) venting the tool entry chamber to atmosphere until air is substantially depleted from the work chamber and the tool entry chamber;

(i) closing the tool entry chamber from atmosphere and permitting gas to leak from the main to cause the pressure to build up to line pressure in the work chamber and the tool entry chamber;

(j) opening the tool entry passage after the pressure has built up to line pressure;

(k) manipulating the shank of said service tool into the work chamber to cause the working end thereof to operatively engage with the gas main and perform a tool function on the gas main;

(l) manipulating the shank of the service tool to withdraw the working end thereof into the tool entry chamber;

(m) closing the tool entry passage and the by-pass passage;

(n) venting the tool entry passage to atmosphere;

(o) modifying the service tool in the tool entry chamber by changing the nature of the working end thereof;

(p) opening the by-pass passage to exclude air from the tool entry chamber;

(q) closing the tool entry chamber from atmosphere and permitting the pressure to build up therein to line pressure;

(r) opening the tool entry passage;

(s) manipulating the shank of the service tool into the work chamber to cause the working end thereof to operatively engage with the gas main and perform a tool function on the gas main

(t) repeating from steps (k) to (r) above recited as often as required to perform the intended work on the gas main except that with the last repetition will include only steps (l) to (m);

(u) and after the last repetition opening the by-pass and venting the tool entry chamber to atmosphere until gas is substantially exhausted from the work chamber;

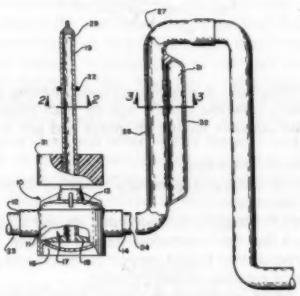
(v) the said steps of removing the tool from the work chamber to the entry chamber and modifying the service tool and admitting the service tool to the work chamber being repeated as many times as there are separate operations to be performed on the gas main with a service tool.

4,497,333

SEQUENCING VALVE AND IRRIGATION SYSTEM

Chester C. Rodieck, 1035 N. Hamlin Way, Lindsay, Calif. 93247

Filed May 5, 1983, Ser. No. 491,665
Int. Cl.³ F17D *1/20*; F16K *31/18*
U.S. Cl. 137—122 **2 Claims**



1. A sequencing valve comprising a hollow body closed on the sides and bottom and open at the top, an inlet port and an oulet port in the body wall spaced from each other and from said open top, a closure plate in said body moveable vertically therein in response to the level of water surrounding said body between a position that leaves said top open and a position where said closure plate covers said open top to close the same, and a closed top hollow tube that is open at the bottom end and is secured to said closure plate to extend therethrough and vertically upwardly therefrom.

4,497,334

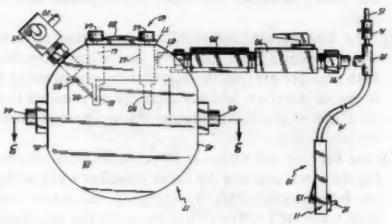
CLEANING APPARATUS FOR LIQUID DELIVERY SYSTEMS

Leo H. Wolf, Rte. 5, Box 363, River Falls, Wis. 54022, and Hugo M. Wolf, 1451 NE. Glacier La., Minneapolis, Minn. 55421

Filed Jul. 12, 1982, Ser. No. 397,454

Int. Cl.³ B67D *5/54*

U.S. Cl. 137—209 **25 Claims**



1. Cleaning apparatus for a liquid delivery system comprising:

a container having an open top;

a control housing removably closing the top of said container, and having a supply conduit extending to the bottom of said container;

inlet means for connecting said housing to a source of air under pressure;

outlet means for connecting said housing to a liquid delivery system;

valving means in said housing, including first and second valves, actuable between normal positions and operated positions, conduit means interconnecting said valves, and means external to said housing for manually actuating each of said valves into the operated position thereof:

said first valve having a normally closed position and an operated position, in which said source is connected to said conduit means;

and said second valve having a normal position, in which said conduit means is connected to said outlet means and an operated position, in which said supply conduit is connected to said outlet means and an operated position, in which said supply conduit is connected to said outlet means;

so that operation of only said first valve connects air from said source to said delivery system through said second valve to enable liquid to be flushed therefrom, and so that operation of only said second valve enables fluid in said container to be supplied to said delivery system by pressure of the air from said source; and

quick release structure for removably interconnecting said housing and said container, said structure comprising a pair of arms pivotal about a central axis to said housing, a pair of struts projecting oppositely from the sides of said container at the bottom thereof, and means carried by said arms for engaging said struts to support said container against said housing.

4,497,335

CONTROL VALVE OF EXHAUST GAS RECIRCULATION APPARATUS

Yoshihiko Masuda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 106,050, Dec. 21, 1979, abandoned. This application Jan. 28, 1982, Ser. No. 343,477

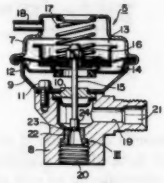
Int. Cl.³ B08B *9/04;* **F16K** *51/00*

U.S. Cl. 137—244 **7 Claims**

1. A control valve for an exhaust gas recirculation apparatus disposed in a passage leading recirculating exhaust gas from an exhaust line to a suction line and designed to change the flow area of said passage in relation to air pressure acting on a diaphragm, said control valve comprising:

a seat portion provided in said passage and including a through hole coaxial with the exhaust line and having an upstream end and downstream end, the downstream end of said through hole defined as a tapered seat, said through hole having an axial length and a diameter at least four times the axial length of said through hole;

a valve body having an axis and comprising a seat sealingly abutting against said tapered seat and a rod portion extending from said seat towards said upstream end of said through hole, said rod portion having a diameter slightly smaller than the diameter of said through hole, said rod portion having an axial length longer than the axial length of said through hole and a free end so that when said seat abuts against said tapered seat the free end of said rod portion protrudes from the upstream end of said through hole, the free end surface of said rod portion at the upstream end being shaped into a flat plane with an acute peripheral edge perpendicular to the axis of the valve body, and said valve body being driven by the diaphragm; and



a throttling portion having a hole with an upstream end and downstream end and coaxial with said through hole and communicated with the upstream end of said through hole;

said rod portion and said through hole cooperating such that the acute edge of said rod portion scrapes off any deposit formed on the inner surface of said through hole when said rod portion moves toward said upstream end of said through hole and the diminishment of the diameter of said through hole by such deposits, which would disadvantageously affect the flow characteristics of the recirculating exhaust gas, does not take place because of the sufficiently large diameter of said through hole in proportion to the axial length of said through hole.

4,497,336

VALVE ASSEMBLY

Borje O. Rosaen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104

Filed Apr. 22, 1983, Ser. No. 487,858

Int. Cl.³ B08B *9/04;* **F16K** *31/524*

U.S. Cl. 137—244 **9 Claims**

1. A valve assembly comprising:

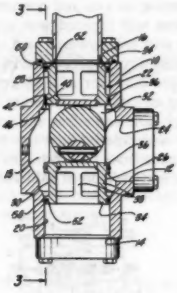
a housing having a first port, a second port and a third port, said second and third ports being axially aligned, said ports adapted for fluid connection to a fluid system,

a piston axially slidably mounted in said housing between a first position in which said first and second fluid ports are fluidly connected and a second position in which said first and third fluid ports are fluidly connected,

a first and second seal, said first seal being carried by said piston at a position spaced inwardly from a first axial end of said piston, said second seal being carried by said piston at a position spaced inwardly from a second axial end of said piston, said first seal engaging a first sealing surface in said housing when said piston is in said first position and said second seal engaging a second sealing surface in said housing when said piston is in said second position,

a first and second scraping member, said first scraping member being carried by said piston adjacent its first axial end

and said second scraping member being carried by said piston adjacent its second axial end so that said seals are positioned in between said scraping members and so that said first and second scraping members pass across and respectively engage said first and second sealing surfaces as said piston moves between said first and second positions,



wherein said piston is dimensioned so that portions of said piston adjacent both of said scraping members remain in contact with said housing as said piston moves between said first and second positions to thereby guide said piston within said housing, and

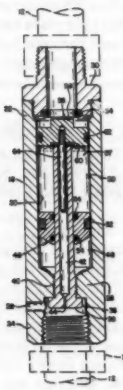
means for moving said piston between said first and second positions.

4,497,337

FLOOR TRAP PRIMER VALVE

Gregory A. Mosbrucker, and Dewayne M. Abelein, both of Portland, Oreg., assignors to Precision Plumbing Products, Inc., Portland, Oreg.

Filed Sep. 12, 1983, Ser. No. 530,903
Int. Cl.³ F16L *55/24*
U.S. Cl. 137—247.25 **4 Claims**



1. A valve for charging water into a sewer line trap from a water line containing water under variable pressure, the valve comprising:

(a) a case having a bore longitudinally therethrough,

(b) connecting means for connecting the case in series flow in the water line,

(c) a hollow shaft mounted in the case and extending from the downstream portion of the case a predetermined distance toward the upstream portion thereof,

(d) a piston slidably mounted on the shaft in sealed relation thereto and to the case and dividing the bore of the case into an air chamber downstream of the piston and a water chamber upstream thereof,

(e) floating seal means and

(f) mounting means mounting the floating seal means within the water chamber upstream of the piston and hollow shaft,

(g) the floating seal means and piston being retracted by water pressure from the water line when a condition of high pressure prevails therein, thereby compressing the air in the air chamber, and advanced by air pressure from the air chamber when a condition of low pressure prevails in the water line,

(h) the floating seal means in its retracted position connecting the water line and the water chamber while sealing off the hollow shaft, thereby charging the water chamber with water and compressing the air in the air chamber

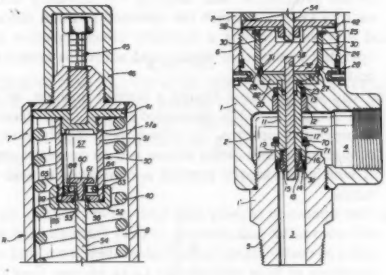
(i) the floating seal means in its advanced position, sealing off the water line from the water chamber and connecting the water chamber with the hollow shaft, thereby upon concurrent advancement of the piston discharging the water content of the water chamber into the trap.

4,497,338

RELIEF VALVE

William E. Baker, 10627 Sugar Hill, Houston, Tex. 77042

Filed Sep. 23, 1983, Ser. No. 535,209
Int. Cl.³ F16K *17/04*
U.S. Cl. 137—467 **20 Claims**



1. A relief valve for relieving excessive fluid pressures in a fluid pressure system comprising:

a valve body having a cavity therein and an inlet port and an outlet port in fluid communication with said cavity;

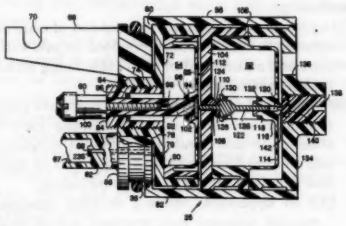
plug means carried in said valve body for reciprocal movement between a closed position in which said plug means prevents flow of fluids through said inlet port and an open position, in which said plug means permits flow of fluids through said inlet port and into said cavity for exit through said outlet port; and

release means carried by said valve body for holding said plug means in said closed position but responsive to fluid pressures above a predetermined amount at said inlet port to release said plug means for movement toward said open position, said release means including a split ring engageable with a corresponding annular shoulder carried by said valve body for holding said plug means in said closed position, said split ring being radially contractable in response to said predetermined fluid pressures for disengagement from said annular shoulder, allowing said plug means to move toward said open position.

4,497,339
TWO-STAGE PRESSURE REGULATOR

George P. Gruner, Andover, and Walter J. Diederich, W. Newbury, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Aug. 16, 1982, Ser. No. 408,549
Int. Cl.³ F16K *31/14*
U.S. Cl. 137—495 10 Claims



1. A regulator particularly adapted for use in a hand-held device powered by liquefied gas, comprising:

a first chamber having a fuel inlet port;

a first diaphragm dividing said first chamber into upstream and downstream compartments, said upstream compartment being in fluid communication with said fuel inlet port;

first valve means for maintaining a predetermined pressure difference between said upstream and downstream compartments;

a second chamber having a fuel outlet port and including a second diaphragm;

second valve means for establishing fluid communication between said downstream compartment and said second chamber whenever the pressure in said second chamber falls below a predetermined level and for blocking fluid communication between said downstream compartment and said second chamber whenever the pressure in said second chamber equals or exceeds said predetermined level;

positive shutoff means for blocking fluid communication between said downstream compartment and said second chamber, independent of the pressure in said second chamber; and

first adjusting means for adjusting said predetermined pressure difference.

4,497,340
SEAL FOR POST INDICATOR VALVE ASSEMBLY

Lorand H. Gain, Jr., Montgomery, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 24, 1983, Ser. No. 460,476
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—556 6 Claims

1. A valve assembly comprising:

a body having a flow passage for a fluid therethrough;

a closure member disposed in said body for movement between a closed position to shut off the flow of said fluid and open position to permit the flow of said fluid through said flow passage;

operating shaft means having one end thereof connected to said closure member and the other extending beyond said body for remote operation of said closure member between said positions;

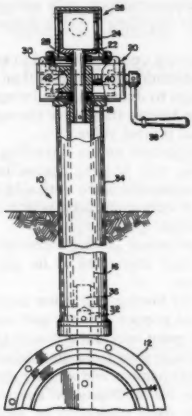
an extension shaft fixedly secured to said other end of said operating shaft for rotational movement therewith;

a valve operator housing disposed about said extension shaft including operating means for turning said extension shaft;

seal means carried by said valve operator housing and disposed about said extension shaft and having annular lip means sealing engagable with the periphery of said extension shaft to prevent leakage between said extension shaft and said valve operator housing;

orienting means formed on the extension shaft end opposite said operating shaft to provide a reference for determining the position of said valve closure member in said flow passage;

indicator means having socket means complementary to said



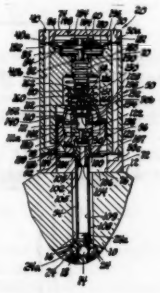
orienting means on said extension shaft for visually indicating the position of said closure member, said socket means slidably accommodates said orienting means for support thereon;

an indicator housing fixedly secured to said valve operator housing and having reference means alignable with said indicator means for remotely disclosing said positions of said closure member.

4,497,341
PAINT COLOR CHANGE VALVE ASSEMBLY FOR RECIRCULATING PAINT SYSTEM

Dolph D. Wright, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1983, Ser. No. 525,130
Int. Cl.³ E30B *7/07*
U.S. Cl. 137—563 2 Claims



1. In a multi-color paint spray apparatus having a main body provided with a common paint applicator channel and a plurality of radially extending passages in communication with said main channel and terminating in valve seats adjacent said main channel, a valve assembly associated with each radial passage and being selectively operable to control discharge of one

color of paint to the main channel, and means for constantly recirculating each color of paint from its source through its associated valve assembly and back to its source,

said valve assembly comprising an outer housing means secured to said main body and surrounding one of said radial passages,

an inlet in communication with said radial passage and said source,

an outlet in communication with said source,

a valve means including a valve poppet for engaging said valve seat,

a stem tube having one end secured to said valve poppet and an outer diameter which is less than the diameter of the radial passage to define an annular space therebetween,

said stem tube having transverse through apertures closely adjacent said poppet valve,

deflectable diaphragm means carried by said housing means and dividing said housing means into a first chamber which is in communication with said inlet of said housing means and a second chamber which is in communication with said outlet,

said diaphragm means having a central opening and being secured to said stem tube at its end remote from said poppet valve,

spring means for biasing said valve means to a first position in which said poppet engages said valve seat to prevent discharge of paint into said common channel and to cause all of the paint to flow from the inlet of the housing means into said first chamber and annular space and thence into the stem tube via the transverse apertures in the stem tube whereby the paint caused to be recirculated up to the poppet valve and through all areas of the valve assembly to minimize pigments in the paint from settling out, and

pressure responsive means operatively connected with said valve means for causing said valve means to be moved in opposition to the biasing force of said spring means to a second position in which said poppet is unseated to allow paint to flow therepast into the common channel.

4,497,342

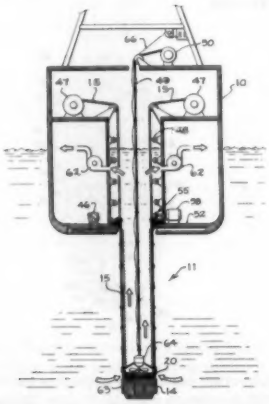
FLEXIBLE RETRACTABLE COLD WATER PIPE FOR AN OCEAN THERMAL ENERGY CONVERSION SYSTEM

James G. Wenzel, Saratoga, and Lloyd C. Trimble, San Jose, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jun. 20, 1983, Ser. No. 505,832

Int. Cl.³ E02D *23/08*; E01G *4/04*; E02B *9/00*

U.S. Cl. 137—565 **18 Claims**



1. An ocean thermal energy conversion (OTEC) system comprising:

(a) a flexible conduit of generally tubular configuration, a proximal end of said conduit being secured to a surface structure and a distal end of said conduit being extendible from said surface structure to a selected ocean depth;

(b) ballast means secured to said distal end of said conduit;

(c) means for extending said distal end of said conduit from said surface structure to said selected ocean depth, and for retracting said distal end of said conduit from said selected ocean depth to said surface structure, said means for extending and retracting said distal end of said conduit including:

(i) a plurality of cables, a proximal end of each cable being secured to winch means mounted on said surface structure, and a distal end of each cable being secured to said ballast means; and

(ii) a plurality of annular shaping members coaxially surrounding said conduit, said shaping members being attached to said conduit at different locations between said proximal end and said distal end of said conduit, said annular shaping members including:

(A) an uppermost shaping member attached to said conduit adjacent said proximal end of said conduit, said uppermost shaping member being securable to said surface structure when said distal end of said conduit is extended to said selected ocean depth, and

(B) a lowermost shaping member attached to said conduit adjacent said distal end of said conduit;

(d) a plurality of clamping devices mounted on each shaping member located intermediate said uppermost and said lowermost shaping members, each one of said clamping devices on each one of said intermediate shaping members being operable to engage a corresponding one of said cables when said distal end of said conduit is extended to said selected ocean depth; and

(e) means for drawing water from said selected ocean depth through said conduit to said surface structure.

4,497,343

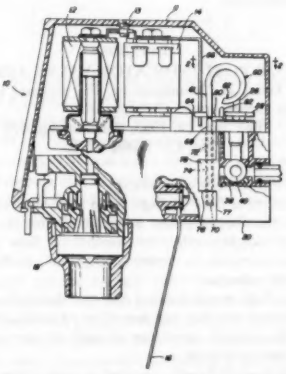
DISCONNECT ARRANGEMENT FOR BEVERAGE DISPENSER VALVES

Wade R. Brown, St. Charles, and Henry Wasserstrom, Chicago, both of Ill., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jan. 28, 1982, Ser. No. 343,559

Int. Cl.³ F17D *1/08*

U.S. Cl. 137—614.06 **2 Claims**



1. In a beverage dispenser including a valve assembly removably connected to a mounting block, the valve assembly including a carbonated water inlet and a beverage syrup inlet and a dispensing valve for mixing and controlling the flow of beverage syrup and carbonated water dispensed by the bever-

age dispenser; and improved disconnect arrangement comprising:

said mounting block including means for connecting said mounting block to a source of carbonated water and to a source of beverage syrup;

a carbonated water passage through said mounting block communicating with the carbonated water inlet in the beverage dispenser;

a beverage syrup passage through said mounting block communicating with the beverage syrup inlet in the beverage dispenser;

said mounting block including disconnect valve means for being opened to allow flow of and for being closed to prevent the flow of carbonated water and beverage syrup respectively through said carbonated water passage and said beverage syrup passage;

retainer means for locking said beverage dispenser valve assembly to said mounting block when moved to a locked position and for unlocking said beverage dispenser valve assembly from said mounting block when moved to an unlocked position;

rotary locking means connected to said disconnect valve means for rotating into a first rotary position in locking engagement with said retainer means when said disconnect valve means is open for holding said retainer means in a locked position, and for rotating into a second rotary position wherein said rotary locking means is disengaged from said retainer means when said disconnect valves means is closed so that said retainer means may be moved to its unlocked position so that said valve assembly can be removed from said mounting block; and

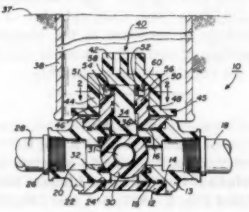
stop means on said retainer means for engaging said disconnect valve means when said disconnect valve means is opened to an optimum flow position so that said disconnect valve means may be returned to said optimum flow position each time said beverage dispenser valve assembly is removed and then reconnected to said mounting block.

4,497,344

FRANGIBLE VALVE STEM ASSEMBLY FOR ROTARY VALVE

Stanley C. Kisiel, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 6, 1982, Ser. No. 447,063
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—797 **5 Claims**



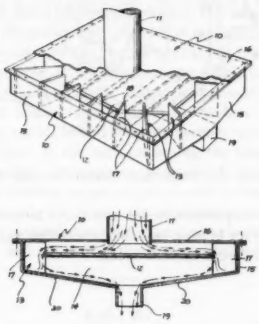
1. In a rotary valve including a body defining a fluid passage between an inlet and an outlet, a closure member within said passage and operably rotatable via a stem extending exterior of said body between a first position opening said passage to fluid flow and a second position closing said passage to fluid flow, the improvement comprising said stem having means defining spaced apart slotted apertures along opposite sides and cap means adapted to cooperate with said stem in a rotational interlock for transmitting rotational torque applied to said cap to said stem for operating said closure member between said first and second positions, said cap means containing frangible means comprising shear pins extending from a surface of said cap into an interfitting relation within said stem slots for effecting said interlock and operative to prevent excess rotational torque applied to said cap from being transmitted to said stem.

4,497,345

FLOW CONVERSION DEVICE AND METHOD

Jeremy J. Lees, 124 Louisa Rd., Birchgrove, NSW, Australia 2041

Filed Jul. 13, 1982, Ser. No. 397,772
Claims priority, application Australia, Nov. 4, 1981, PF1420/81
Int. Cl.³ F15D *1/14*; B65G *53/04*
U.S. Cl. 138—39 **6 Claims**



1. A device for converting at least a part of a stream of a flowable medium flowing down a tube into a flat stream having a substantially uniform flow rate across its width, comprising:

a substantially vertical tube down and through which the medium can flow;

a stationary and planar first plate, said first plate being substantially flat and substantially horizontal to induce smooth and non-turbulent flow of said medium across said first plate and being disposed below the tube;

at least one second plate inclined at an angle substantially less than 90° relative to the first plate and adapted to receive medium flowing over the edge of at least a portion of the first plate and extending at least partially beneath the first plate and terminating in a straight lower edge; and

means to meter the amount of medium flowing onto any one increment of the width of the second plate so that it will be, after flowing down the second plate a predetermined distance, substantially equal to the amount of medium flowing down any other increment of equal width.

4,497,346

CLUTCH ARRANGEMENT FOR CONTROLLING A HEDDLE OF A WEAVING MACHINE

Otto Hintsch, and Werner Julich, both of Wallisellen, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 9, 1981, Ser. No. 300,663
Claims priority, application European Pat. Off., Sep. 12, 1980, 80 105440.4
Int. Cl.³ D03C *1/00*
U.S. Cl. 139—66 R **6 Claims**

1. A clutch arrangement for controlling a heddle of a power loom, said arrangement comprising

an intermittently rotatable drive shaft having at least one slot therein;

an eccentric rotatably mounted on said shaft;

a pawl mounted on said eccentric for engagement in said slot of said shaft;

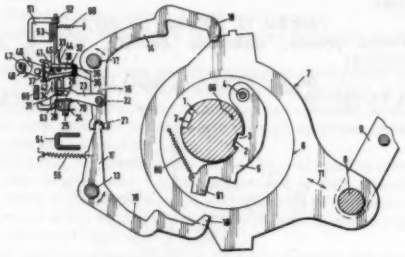
at least one control lever movable into the path of said pawl;

a bar connected to said control lever for moving said control lever back and forth;

a stroke meter drive for engaging said bar to move said bar;

a program control device for controlling operation of said pawl;

a stroke member for selectively driving said bar in programmed response to said stroke member scanning said control device;



a drive lever for imparting motion to said stroke member; and

a spring interposed between said drive lever and said stroke member for biasing said stroke member against said bar to transmit forces therebetween.

4,497,347

MECHANISM FOR ACTUATING THE WEFT-INSERTING NEEDLES OF A WEAVING LOOM

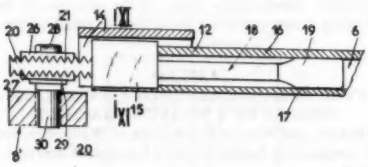
Denis Kiwior, Riedisheim, and Victor Riner, Mulhouse, both of France, assignors to Societe Alsacienne de Construction de Materiel Textile, France

Filed Nov. 5, 1982, Ser. No. 439,639

Claims priority, application France, Dec. 11, 1981, 81 23169

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—449 **9 Claims**



1. A device for controlling the rectilinear reciprocating movement of weft-inserting needles driven by a needle-actuating lever of a weaving loom, wherein each needle is connected to the needle-driving system by means of a flexible connecting member which is constituted by a flexible member of long and slender shape arranged in coaxial relation to the needle, one end of said flexible member being rigidly fixed by bonding in the vicinity of the end of said needle, the central portion of said long flexible member being free to move laterally with respect to the needle and the opposite end of said long flexible member being coupled to the end of the needle-actuating lever by means of a spindle, and said needle is guided within a rail by means of a block of antifriction material which is attached to the end of said needle.

4,497,348

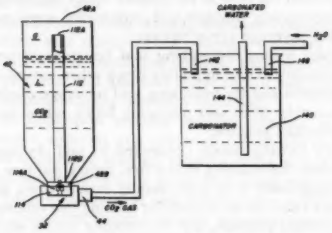
APPARATUS AND METHOD FOR LOADING SYRUP AND CO_2 CONTAINERS INTO A PORTABLE POST-MIX BEVERAGE DISPENSER UNIT

Jason K. Sedam, Dunwoody, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 320,476, Nov. 12, 1981, , which is a continuation-in-part of Ser. No. 277,806, Jun. 26, 1981, Pat. No. 4,357,284. This application Jul. 24, 1984, Ser. No. 634,044

Int. Cl.³ B65B *3/04*; B01F *3/04*

U.S. Cl. 141—2 **9 Claims**



2. A method for loading syrup supply containers, and CO_2 supply containers into a post-mix beverage dispenser unit, said dispenser unit including first socket means in a CO_2 pressure regulator valve assembly for receiving and supporting the discharge end and the weight of a CO_2 cylinder and second socket means in a beverage dispenser valve assembly for receiving and supporting discharge ends and the weight of syrup containers, comprising the steps of:

providing syrup containers with discharge openings therein which are normally at the top of the container during storage and transportation;

providing a CO_2 container with an opening in a discharge end that is normally at the top of the container during storage and transportation;

inverting said syrup containers and plugging the discharge opening into said second socket means provided in the beverage dispenser valve assembly;

inverting said CO_2 container and plugging the discharge opening into said first socket means provided in the CO_2 regulator valve assembly; and

opening a valve between the discharge opening of said CO_2 container and said regulator valve assembly to initiate the flow of CO_2 from said CO_2 cylinder to said regulator valve assembly in response to the plugging of the discharge opening of said CO_2 container into the first socket means in the regulator valve assembly.

4,497,349

SOLUTION DISPENSER

Donald V. Farley, Crestline, Calif., assignor to Loma Linda University Medical Center, Loma Linda, Calif.

Filed Feb. 8, 1982, Ser. No. 346,629

Int. Cl.³ G21F *5/00*

U.S. Cl. 141—19 **4 Claims**

4. In an apparatus for dispensing a gas contained in a sealed ampule having an outlet line, the combination of:

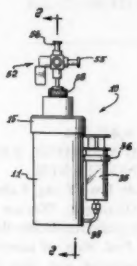
a housing having a cavity for receiving said ampule, said housing including means for retaining said ampule therein, seat means for engagement with said ampule outlet line, means defining first and second fluid flow paths from the exterior of said housing to said seat means, and a cap closing said cavity;

a syringe mounted on said housing and connected to said first flow path;

a hollow needle for positioning in said second flow path and having a first end for entering said ampule outlet line and a second end projecting from said housing; and

a valve for closing said second end of said needle;

whereby a liquid in said syringe is drawn into said ampule when the ampule seal is broken by insertion of said needle with said valve closed so that said gas is dissolved in said liquid, permitting withdrawal of gas-liquid solution through said needle and valve when said valve is open;



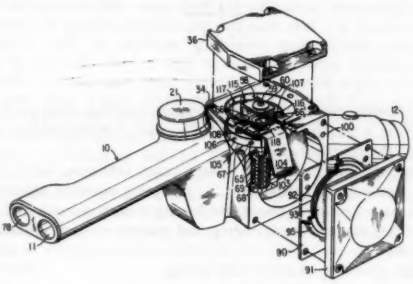
said means for retaining including a split collar about said outlet line, with said collar sliding within said cavity to support said ampule in said cavity, and housing means for clamping of said collar to said housing by said cap with the outer end of said outlet line engaging said cap.

4,497,350

VAPOR RECOVERY SYSTEM HAVING AUTOMATIC SHUT-OFF MECHANISM

Robert W. Guertin, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jun. 22, 1983, Ser. No. 506,857
Int. Cl.³ B65B *3/18*
U.S. Cl. 141—206 **20 Claims**



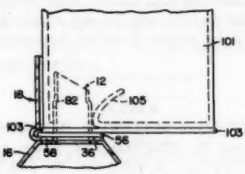
1. An automatic shut-off nozzle comprising a body having an inlet and an outlet, a valve in said body controlling flow of liquid from said inlet to said outlet, resilient means continuously urging said valve to its closed position, manual operated means to move said valve to an open position against the force of said resilient means, said manual operated means, including moving means for moving said valve to an open position, means slidably mounted in said body for sliding therein, and means to pivotally connect said moving means to said slidably mounted means a spout communicating with said outlet, said spout being insertable into a tank through an opening therein to allow the liquid to be dispensed therein, holding means for holding said slidably mounted means in a position in which said moving means can hold said valve in an open position against the force of said resilient means when said holding means is in a holding position, release means for holding said holding means in the holding position, said release means being movable in one direction to release said slidably mounted means of said manual operated means through ceasing to hold said holding means in the holding position in response to either pressure in the tank exceeding a predetermined pressure or the liquid in the tank reaching a predetermined level to allow closing of said valve and stoppage of liquid flow through said body through said slidably mounted means being movable in a direction opposite to the one direction in which said release means moves, first means communicating with the tank and causing movement of said release means in the one direction in resopnse to the liquid reaching the predetermined level in the tank, said first means including a first chamber communicating with the tank, a first diaphragm forming a wall of said first chamber, and first separate means separate from said release means and said holding means to act on said release means to cause movement of said release means in the one direction in response to said first diaphragm moving in response to the liquid reaching the predetermined level in the tank, and second means communicating with the tank separately from said first means and responsive only to the pressure in the tank exceeding the predetermined pressure, said second means including a second chamber communicating with the tank, a second diaphragm forming a wall of said second chamber and responsive only to the pressure in the tank exceeding the predetermined pressure, and second separate means separate from said release means and said holding means to act on said release means to cause movement of said release means in the one direction in response to said second diaphragm moving in response to the pressure in the tank exceeding the predetermed pressure.

4,497,351

APPARATUS FOR FILLING A DEVICE WITH A FLUID

Tony P. Garcia, P.O. Box 393, Indian Rocks Beach, Fla. 33535

Continuation of Ser. No. 199,353, Oct. 21, 1980, abandoned.
This application Dec. 15, 1982, Ser. No. 449,916
Int. Cl.³ B65B *3/06*
U.S. Cl. 141—329 **16 Claims**



1. An apparatus for connection to a fluid input of a device for filling the device with a fluid contained within a container, comprising in combination:

a base including an aperture in the bottom thereof and an upstanding wall;

a substantially cylindrical hollow cutting element including an upper portion angularly formed to define a point for initiating the piercing of a hole in the container and for allowing the fluid to flow from the container into and through said cutting element and then into the device;

a stand means for connecting said cutting element above said upstanding wall of said base in a position substantially concentric to said upstanding wall with said cutting element being completely, non-contiguously, positioned from the upper edge of said upstanding wall to permit the container, partially filled with the fluid, to be prematurely removed from said cutting element and held above said cutting element allowing the remaining fluid in the container to drain therefrom into and through said cutting element and about the exterior of said cutting element and then into the device without spillage of the fluid over the outside of said upstanding wall of said base; and

means for connecting said base to the fluid input of the device.

4,497,352

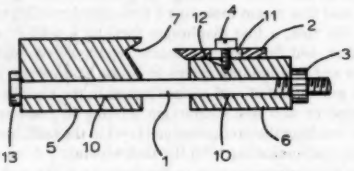
ADJUSTABLE VIOLIN PEG AND DOWEL SHAVING DEVICE

Paul K. Lippolt, 6128 N. Willston Dr., Falls Church, Va. 22044

Filed May 9, 1983, Ser. No. 492,957

Int. Cl.³ B27C *7/06*

U.S. Cl. 142—48 **9 Claims**



1. A violin peg and dowel shaving device comprising two guide bolts threaded at one end to receive adjusting nuts, each extending along an axis through bores in two substantially rectangular blocks, one block being stationary by means of said guide bolts being fixedly secured to it, and the other being movable along said guide bolts from their threaded ends, the stationary block having a V-shaped groove extending across on its side facing said movable block, and a cutterblade being mounted by means of two securing screws, each screwable into threaded bores atop said movable block, the cutterblade having a beveled edge facing stationary block.

8. A process for shaving a peg or dowel comprising placing a peg or dowel in a V-shaped groove provided in a side of a stationary block, fitting an opposing movable block with a cutterblade such that a beveled edge of the cutterblade overhangs the movable block and is axially aligned with a vertex of the V-shaped groove, rotating adjusting nuts for axially advancing the movable block along guide bolts toward the stationary block until the edge of the cutterblade impinges upon the peg or dowel and rotating the peg or dowel to subject the outer surface of the peg or dowel to the cutting force of the beveled edge.

4,497,353

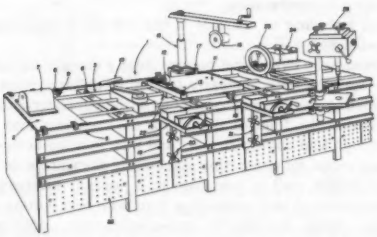
MULTIPURPOSE MATERIAL WORKING TOOL

William B. Sproat, Jr., 1763 Maple St., Salem, Ohio 44460

Filed Sep. 10, 1981, Ser. No. 300,757

Int. Cl.³ B27C *9/00*

U.S. Cl. 144—1 R **12 Claims**



9. A multipurpose material working tool comprising a supporting frame having an end table portion and three longitudinal ways, a band saw secured to a vertical support member of said end table, a headstock anchored to said end table, a rotatable spindle extending axially from the headstock, a motor adapted to drive both the band saw and rotatable spindle, a work supporting table disposed at a 90° angle to said rotatable spindle, and a rotary tool attached to said spindle said tool further comprising a radial trolley adapted to ride on said longitudinal ways, such radial trolley being equipped with a lathe tail stock, a radial arm adapted to move in a vertical and circumferential direction to the surface of the radial trolley, and a removable radial saw, tilt arbor saw or radial drill press attached to said radial arm.

4,497,354

LOW NOISE PLANING MACHINE, PARTICULARLY HAND PLANER

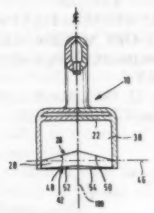
Martin Kummer, Filderstadt; Uwe Krieg, Leinfelden-Echterdingen; Wolfgang Jundt, Ditzingen; Werner Rieker, Steinenbronn; Fritz Schädlich, Leinfelden-Echterdingen, and Günter Schaal, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 419,878, Sep. 20, 1982, abandoned, which is a continuation of Ser. No. 168,633, Jul. 11, 1980, abandoned. This application Jun. 6, 1984, Ser. No. 617,842

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939598

Int. Cl.³ B27C *1/10*

U.S. Cl. 145—4 **13 Claims**



1. Planing machine having a housing including a first portion defining a planing surface and a second portion defining an operating chamber (18);

an essentially cylindrical, rotary cutter (16) mounted in the housing and rotatable in the operating chamber about an axis of rotation, the cutter having a body portion and at least one axially extending and radially projecting cutter blade;

said operating chamber (18) having

an inlet portion (28) adjacent a rotary cutter and open to the planing surface of the machine,

an inner portion (32) and

an outlet (34) from the inner portion passing through the housing to permit removal of chips from the operating chamber (18),

said housing including an inner separating wall (36) forming, at least in part, a wall of said operating chamber and separating said inner portion of the chamber from the cutter, wherein

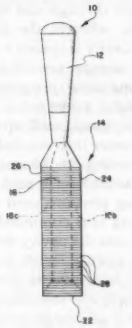
the separating wall terminates in an edge (26), which edge is positioned adjacent the rotary cutter and is located in a plane parallel to a plane tangent to the essentially cylindrical rotary cutter; and

wherein the edge (26) extends at least in part in a direction which is inclined at an angle less than 90 degrees with respect to a line parallel to the axis of rotation of the rotary cutter (16) to provide for sequential passage of elementary zones or portions of the cutter blade past said edge and prevent formation of noise generating pressure waves.

4,497,355
WOODWORK CUTTING DEVICE SUCH AS A WOOD CHISEL WITH SHARPENING GUIDES PROVIDED THEREWITH

Ulys Smith, 903 Neuse Dr., New Bern, N.C. 28560

Filed Sep. 24, 1979, Ser. No. 78,487
Int. Cl.³ B25D 3/00
U.S. Cl. 145—24 1 Claim



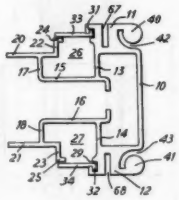
1. A woodwork cutting device such as a wood chisel or plane iron blade having a blade portion including two side edges, a cutting end and opposite front and back faces, the front face having a beveled cutting edge formed thereon adjacent said cutting end, a plurality of spaced grinding guide means formed transversely across said back face of said woodwork cutting device and extending in general parallel relationship with said cutting end for enabling said cutting end to be properly sharpened, while the front face and beveled edge is turned downwardly away from the individual sharpening the device, by grinding the cutting end such that it is maintained parallel with the adjacent transverse guide means formed across the back face of said woodwork cutting device, said beveled cutting edge being formed at a selection angle relative to side edges of said blade portion, and wherein there is provided a plurality of grinding angle guides formed on at least one side edge of said blade portion with said grinding angle guides extending in side by side parallel relationship with respect to each other and oriented generally parallel to and at approximately the same angle as the place of said beveled cutting edge such that during the sharpening process the grinding angle guides can be utilized to sharpen the beveled cutting edge at a proper angle relative to the side edges of the blade portion.

4,497,356
SCREENING APPARATUS

Terry C. Luck, Rayleigh, and Paul R. Marsden, High Wycombe, both of England, assignors to Intercraft Designs Limited, England

Filed May 21, 1982, Ser. No. 380,751
Claims priority, application United Kingdom, May 21, 1981, 8115613
Int. Cl.³ A47G 5/00
U.S. Cl. 160—135 8 Claims

1. A partitioning wall, including:
a first panel;
a second panel;
connecting means for releasably and adjustably joining the first panel to the second panel along an upright edge of each of the first and second panels;
first and second upright members, each having a left side portion, a right side portion and a rear face portion, the left side portion and the rear face portion together defining a left corner and the right side portion and the rear face portion together defining a right corner with said left and right side portions being arranged on the same side of the rear face portion extending generally perpendicularly from said rear face portion, said first upright member being provided along one end of the first panel and said second upright member being provided along one end of the second panel;
a first right projection provided at the right corner and extending along the first upright member, said first right projection together with said right corner defining a right arcuate groove having generally parallel sides, said right arcuate groove being provided between the first right projection and the rear face portion;

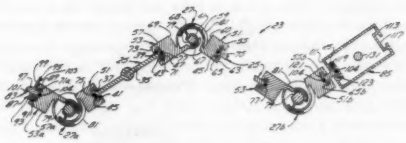


a first left projection provided at the left corner and extending along the first upright member, said first left projection together with said left corner defining a left arcuate groove having generally parallel sides, said left arcuate groove being provided between the first left projection and the rear face portion;
said connecting means including a joining member having first and second arcuate arms so as to be slidably received within said arcuate grooves of the first and second upright members, said first and second arcuate arms being defined by generally parallel side walls; and,
resilient flaps resiliently biased in said first and second upright members along an outwardly facing side of said left and right side portions.

4,497,357
SECTIONAL FOLDING CLOSURE

Henri M. R. Labelle, Cornwall, Canada, assignor to Martinray Industries Ltd., Cornwall, Canada

Continuation of Ser. No. 960,247, Nov. 13, 1978,. This application Oct. 3, 1980, Ser. No. 193,719
Int. Cl.³ E0D5 15/26
U.S. Cl. 160—199 8 Claims

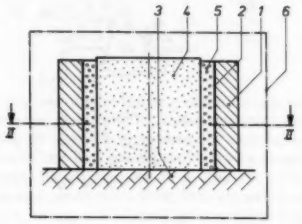


1. A folding closure assembly for closing an opening having; a plurality of closure sections; each closure section comprising a plurality of panels pivotably joined together; means on each closure section for use in suspending said closure section in the opening; a first joining member on one side edge of each section; a second joining member on the other side edge of each section; the first joining member on one section joining with the second joining member on an adjacent section after the sections are suspended in the opening, and fastening means for fastening the joined joining members together on the interior side of the folding closure.

4,497,358
PROCESS FOR THE MANUFACTURE OF A STEEL BODY WITH A BOREHOLE PROTECTED AGAINST ABRASION

Gerhard Gnadig, Ditzingen; Fritz Przybylla, Heilbronn, and Friedrich Schneider, Weissach, all of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Nov. 23, 1982, Ser. No. 443,920
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146621
Int. Cl.³ B22D *23/06*
U.S. Cl. 164—80 5 Claims

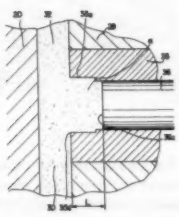


1. A process for providing abrasion and corrosion resistance in the borehole of a steel body comprising placing an alloying material of solid form within the borehole of a steel body, said alloying material having abrasion and corrosion resistance, and melting said alloying material in a gas heated protective gas oven without electro-magnetic force to effect diffusion bonding of said alloying material with said steel body and the formation of an abrasion and corrosion resistant lining on said steel body.

4,497,359
DIE-CASTING METHOD

Haruo Suzuki, Nishikasugai, and Shigeyoshi Hashimoto, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

PCT No. PCT/JP79/00032, § 371 Date Oct. 14, 1980, § 102(e) Date May 7, 1979, PCT Pub. No. WO80/01655, PCT Pub. Date Aug. 21, 1980
Continuation of Ser. No. 209,705, Oct. 14, 1980, abandoned.
This PCT application Feb. 14, 1979, Ser. No. 561,128
The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.
Int. Cl.³ B22D *18/02*
U.S. Cl. 164—120 16 Claims



1. A die-casting method comprising:

a first step of relatively moving dies into close contact so as to form therebetween die cavity for casting a product, a runner through which molten metal is injected into said die cavity, and a substantially non-narrowing squeeze passage having a cross-sectional area S and connected at open end directly to said die cavity at a point other than the point of connection between said die cavity and said runner;

a second step of injecting, by forwardly moving an injection plunger to effect a predetermined injection pressure, the molten metal from said runner via a gate into said die cavity and said squeeze passage to fill said die cavity and said squeeze passage with the molten metal;

a third step of starting a squeezing displacement of the molten metal in said non-narrowing squeeze passage by moving a squeeze plunger through said squeeze passage from a retracted position, wherein the squeeze plunger end which faces the die cavity is spaced a distance L from said end of said squeeze passage, toward said die cavity and at a predetermined squeezing pressure greater than said injection pressure and at a time before said gate is blocked by solidified molten metal, said squeeze plunger being moved a distance greater than one-half of said distance L;

a fourth step of continuing the squeezing on said molten metal by said squeeze plunger in said passage at said predetermined squeezing pressure until said cavity is filled voidlessly and, during said continued squeezing, forcing molten metal out of said die cavity through said gate into said runner by the molten metal displaced out of said squeeze passage by said squeeze plunger and until the molten metal is completely solidified at least in said die cavity while retaining said squeeze plunger substantially fully inside said passage to produce a solidified voidless die-cast product;

a fifth step of retracting said squeeze plunger to remove said squeezing pressure from said squeeze passage after the molten metal is solidified in said die cavity;

a sixth step of relatively moving said dies away from one another for the removal of said die-cast product which has been solidified in said die cavity; and

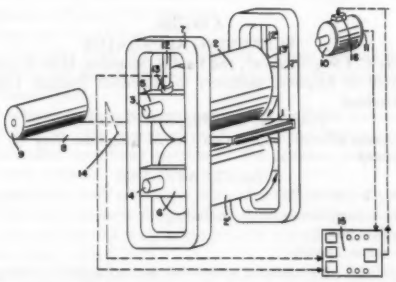
preventing said injection plunger from being moved backward during said third and fourth steps by the effect of said greater pressure applied by said squeeze plunger;

wherein said area S and said distance L are related by $S \geqq 0.35L^2$.

4,497,360
METHOD OF MONITORING AND CONTROLLING OPERATING PARAMETERS OF A MACHINE FOR THE CONTINUOUS CASTING OF STRIPS BETWEEN ROLLS

Serge Bercovici, Grenoble, France, assignor to Cegedur Societe de Transformation de l'Aluminiu, Pechiney, Paris, France

Filed Aug. 24, 1981, Ser. No. 295,532
Claims priority, application France, Sep. 1, 1980, 80 19162
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—454 11 Claims



1. A method for the monitoring and control of operating parameters of a machine for the continuous casting of strips between journalled rolls, in which consideration is given to at least one of the parameters from the group consisting of the torque exerted on at least one of the rolls to cause the strip to advance and the stress exerted by the strip on at least one of the

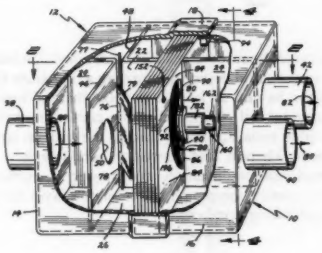
journals, the deviation between the instantaneous value of the parameter under consideration and the mean value of the same parameter are measured over a period of time immediately beforehand; reducing the speed of casting when this deviation becomes negative and greater in absolute value than a reference deviation, until the deviation becomes less than the reference deviation; increasing the casting speed for as long as the deviation between the instantaneous value of the parameter and the mean value of this parameter over a period of time immediately beforehand does not exceed the reference deviation.

4,497,361

REGENERATIVE HEAT AND HUMIDITY EXCHANGING APPARATUS

David J. Hajicek, 14824 Glendale Rd., Minnetonka, Minn. 55343

Filed Jun. 15, 1981, Ser. No. 273,355
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—7 **16 Claims**



1. Regenerative heat and humidity exchanging apparatus comprising a housing providing a pair of passages through which gaseous fluids having different thermal characteristics flow, a portion of each passage being adjacent the other, a partition extending transversely across each of said passages, each partition having an opening therein, a fan associated with each partition opening, a valve means for closing said partition openings when said fans are not operating, said valve means having a flap valve member pivotally mounted so that one flap portion thereof coacts with one partition opening and a second flap portion thereof coacts with the other partition opening, a plurality of rotary disks pervious to the gaseous fluids passing through said passages, means mounting said disks for rotation about an axis so that one segment of each disk at any given moment resides in one of said adjacent passage portions used and a second segment resides in the other of said adjacent passage portions, and a plurality of stationary separators positioned in said housing having a first portion residing in said one passage portion and formed with an opening therein for the passage of a gaseous fluid therethrough and having a second portion residing in said second passage portion also formed with an opening therein for the passage of a gaseous fluid therethrough, there being one of said pervious disks rotatively positioned between adjacent separators, whereby, when said disks are rotated, heat and/or humidity is transferred by each disk from said one passage portion when the gaseous fluid flowing therethrough has a higher thermal or moisture characteristic to said second passage portion when the gaseous fluid flowing therethrough has a lower thermal or moisture characteristic.

7. Regenerative heat exchanging apparatus in accordance with claim 1 including spring means for biasing said flap valve member in a direction to cause said flap valve member to close both of said partition openings when said fans are not operating, said fans developing sufficient fluid pressure to overcome the biasing action of said spring means to cause opening of said partition opening when said fans are operating.

4,497,362

REGENERATIVE ROOM AIR EXCHANGER

W. Dorwin Teague, Jr., Nyack, N.Y., assignor to Southern California Gas Co., Los Angeles, Calif.

Filed Mar. 21, 1983, Ser. No. 477,021
Int. Cl.³ F24F *7/08*; F24D *15/00*
U.S. Cl. 165—54 **16 Claims**

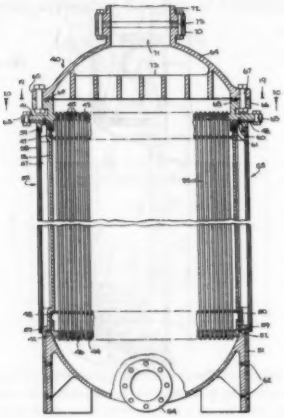
1. Apparatus for removing room air from a room of a house and for supplying fresh air to said room, comprising first vertically disposed conduit means through which said room air flows to the exterior of said room, said first conduit means being formed of heat conductive material and including a first set of vertically disposed channels to conduct a flow of air; second vertically disposed conduit means through which said fresh air flows to said room, said second conduit means being formed of heat conductive material and including a second set of vertically disposed channels to conduct a flow of air; said first and second sets of channels being interdigitated and in counterflow heat exchange relationship with each other to enable the transfer of heat from one to the other of the respective air flows conducted in said first and second sets of channels; a jacket surrounding and spaced from said first and second interdigitated sets of channels, thereby forming a third vertically disposed conduit surrounding said first and second sets of channels in the space between said jacket and said interdigitated channels, said third conduit being in fluid communication with said first conduit means; exhaust means in fluid communication with said first conduit means to discharge said room air therefrom; inlet means in fluid communication with said second conduit means to supply said fresh air thereto; a removal register coupled to said third conduit and positioned in said room in the vicinity of the ceiling thereof, and through which said room air passes to flow through said third conduit and then through said first conduit means to said exhaust means; said first conduit means communicating with said third conduit means within said jacket in the vicinity of the floor of the room, remote from said removal register; and a supply register coupled to said second conduit means and positioned in said room in the vicinity of the floor thereof, and through which said fresh air passes into said room from said second conduit means and said inlet means whereby room air drawn into said jacket through said removal register near the ceiling of the room by said exhaust means flows first downwardly in said third conduit means in concurrent relation to fresh air in said second conduit means and thence upwardly to said exhaust means through said first conduit means countercurrent to fresh air in said second conduit means.

4,497,363

PLATE-PIN PANEL HEAT EXCHANGER AND PANEL COMPONENTS THEREFOR

William E. Heronemus, 730 West St., Amherst, Mass. 01002

Filed Apr. 28, 1982, Ser. No. 372,539
Int. Cl.³ F28G 15/02
U.S. Cl. 165—95 34 Claims



1. A plate-fin heat exchanger adapted for use in ocean thermal energy conversion systems, the heat exchanger comprising:

a plurality of elongated metal plate-fin panels arranged in parallel spaced apart relation, each panel having two rectangular side walls with flat exterior surfaces and a plurality of longitudinally extending fins connecting the interior surfaces of said side walls together in spaced apart relation, said fins creating a plurality of longitudinally extending, laterally spaced, internal passages between the two side walls;

first and second header chambers disposed at opposite ends of the plate-fin panels, each header chamber including a headering plate having a plurality of parallel slotted apertures, and the corresponding end of each plate-fin panel being inserted through a corresponding one of said slotted apertures and being fastened thereto, whereby the plurality of panels are maintained in said parallel closely-spaced relation;

rigid support members extending between the first and second header chambers;

means for dislodging accumulated foreign matter from at least a localized portion of the exterior surface of each panel side wall; and

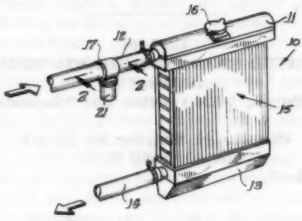
means mounted on said support members and connected to said dislodging means for moving said dislodging means to traverse the exposed exterior surface of each panel side wall between the header plates of said header chambers, wherein the thickness of and spacing between the side walls of each plate-fin panel are very small compared with the length of the panel, such that the panel could buckle even without the application of external load if unsupported with its longitudinal dimension approximately vertical, and said rigid support members exert an axially outward force against each header plate, whereby each plate-fin panel is maintained in tension in its longitudinal dimension to prevent buckling of said panel.

4,497,364

LAYERED SOLID CORROSION INHIBITORS FOR USE IN CORRODIBLE DEVICES FOR AUTOMATIC ADDITION TO COOLANT SYSTEMS

Brian E. Cheadle, Bramalea, and Gordon J. Lee, Mississauga, both of Canada, assignors to Long Manufacturing Ltd., Ontario, Canada

Filed Jan. 3, 1983, Ser. No. 415,115
Int. Cl.³ F28F 19/00
U.S. Cl. 165—134 R 5 Claims



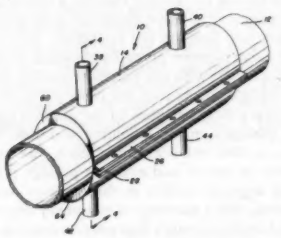
1. In a device for automatic addition of corrosion inhibitor to a coolant system, said device comprising a container for corrosion inhibitor having at least a portion thereof formed of a corrodible metal foil positioned in the coolant system so that said corrodible metal foil is exposed to the coolant stream, the improvement wherein said corrosion inhibitor is a layered, solid, anhydrous composition comprising a surface layer formed of a caustic compound and a second layer formed of a corrosion inhibiting compound.

4,497,365

HEAT EXCHANGER

John Boyer, 203 Eveningside Dr., Chattanooga, Tenn. 37404

Filed Aug. 15, 1983, Ser. No. 522,976
Int. Cl.³ F28D 7/02; F28F 3/12
U.S. Cl. 165—164 9 Claims



1. A heat exchanger adapted to be disposed about an existing fluid carrying conduit to transfer heat between the fluid in said conduit and the fluid flowing through said heat exchanger, said heat exchanger comprising hollow thin walled outer and inner hollow housings of finite length positioned one within the other, said inner housing having a cross sectional configuration and size substantially conforming to the exterior of said conduit, each housing being incomplete about the respective periphery to provide a respective pair of spaced apart peripheral edges, means for securing each peripheral edge of the outer housing to a corresponding peripheral edge of the inner housing in sealed relationship along the length of each housing, means for securing the outer housing to the inner housing at adjacent facing surfaces in substantially sealed relationship along the length of said housings at a location substantially opposite said peripheral edges to form a pair of longitudinally extending cavities between said housings, fluid inlet and outlet

means communcating with each cavity, end closure means secured to the ends of both housings for closing each cavity at each end of the housings while permitting said housings to hingedly bend along said secured surfaces when a force is applied to separate and open the space between the peripheral edges of the inner housing and the peripheral edges of the outer housing to permit entrance of said conduit through said space for disposition of said housings about said conduit, and fastening means for drawing and fastening the spaced peripheral edges together so that at least a substantial portion of the inner housing abuts the conduit.

4,497,366

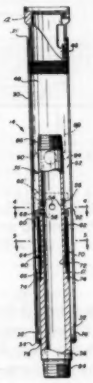
PACKER ACTUATED VENT ASSEMBLY

Emmet F. Brieger, Albuquerque, N. Mex., assignor to Geo Vann, Inc., Houston, Tex.

Division of Ser. No. 384,578, Jun. 3, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,339

Int. Cl.³ E21B *33/129, 34/12, 43/11*

U.S. Cl. 166—150 **15 Claims**



1. In a packer device adapted to be anchored downhole in a borehole, and having a mandrel axially movable respective to a packer body for setting a packer element against the borehole wall, with a tubing string connected to the mandrel for conducting fluid flow from a location below the packer to the surface of the ground, in combination;

a packer actuated vent assembly, said vent assembly includes a hollow mandrel extension connected to the packer mandrel, a sliding valve means, and a barrel;

said mandrel extension, sliding valve means, and barrel are concentrically arranged respective to one another, with said sliding valve means slidably engaging a marginal length of said mandrel extension in sealed relationship therewith, and with said barrel being radially spaced from said sliding valve means and from said mandrel; aperture means in said marginal length of said mandrel extension by which a flow path is formed from the interior to the exterior thereof;

means by which the upper end of said mandrel extension and barrel, respectively, can be attached to the lower end of the packer mandrel and packer body, respectively;

means on said barrel for engaging and moving said sliding valve means from a flow permitting to a flow preventing position when said mandrel extension is moved relative to said barrel;

so that when the packer is set by moving the mandrel of the packer relative to the packer body, said mandrel extension is moved relative to said barrel, causing said means on said barrel to move said sliding valve means to the flow preventing position.

4,497,367

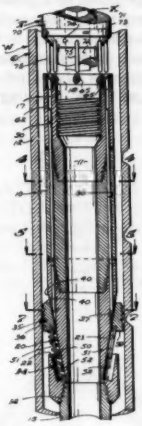
LINER HANGER

Alan R. Stevenson, 12350 E. Montague St., Pacoima, Calif. 91331

Filed Feb. 4, 1983, Ser. No. 464,104

Int. Cl.³ E21B *43/10*

U.S. Cl. 166—208 **14 Claims**



1. A liner hanger comprising an elongate vertical body with upper and lower ends, a central longitudinal flow passage, a cylindrical exterior surface, coupling means at its lower end engaged with the upper end of a depending liner, releasable coupling means at and within its upper end with a threaded part releasably engaging a threaded part of a setting tool on an elongate upwardly extending setting string of pipe, a plurality of elongate vertically extending circumferentially spaced radially outwardly opening recesses with radially outwardly and downwardly disposed upwardly and radially outwardly inclined ramp surfaces in the exterior of the body and positioned longitudinally thereof in vertical spaced relationship below said releasable coupling means and elongate vertical passages in the body and opening upwardly at the upper end of the body and intersecting and opening at the ramp surfaces of related recesses; elongate vertically extending slips with upper and lower ends, outer semi-circular casing engaging surfaces and ramp surface engaging inner surfaces normally positioned in the lower portions of and shiftable vertically upwardly and radially outwardly in related recesses; spring means normally yieldingly urging the slips upwardly and outwardly in the recesses; elongate vertical push rods with upper and lower ends slidably engaged in the passages; releasing means on the setting tool releasably engaging the upper ends of the rods and holding the rods down in the passages with their lower end portions normally projecting into their related recesses and with their lower ends releasably engaging upwardly disposed stop surfaces on the slips and releasably holding the slips down and releasing the slips for upward and outward movement in the recesses when said releasing means releases and allows said rods to move upwardly in the passages.

4,497,368

HANGER MECHANISM

John L. Baugh, Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 402,387, Jul. 27, 1982, abandoned. This application Mar. 23, 1984, Ser. No. 592,737

Int. Cl.³ E21B *23/00*

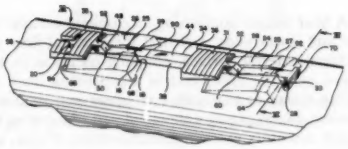
U.S. Cl. 166—208 **4 Claims**

1. A hanger mechanism for a liner hanger of the type used to hang liners in a well bore, comprising:

an elongated tubular body;

at least two longitudinally spaced sets of cone elements extending circumferentially around the exterior of said tubular body;

one or more slip units, each of said slip units having at least a leading and a trailing spaced slip element connected by an intermediate longitudinal bar, said leading slip element having a rear edge joined to a generally rectangular mid-section of said longitudinal bar, and said longitudinal bar having a guide portion adapted to be slidingly received within a guide track formed in selected ones of said cone elements on the exterior of said tubular body, said guide tracks including an upper retaining lip for holding said



longitudinal bar inward against said tubular body as said slip elements move over said cones; and

wherein said guide portion of said intermediate longitudinal bar has a lower surface in contact with said tubular body, opposing side surfaces and a top surface, said top surface being joined by a downwardly sloping surface to an extension of said trailing slip, said trailing slip extension having an upwardly sloping portion which connects said downwardly sloping surface to a top surface of said trailing slip, whereby sliding movement of said guide portions within the respective guide track causes said spaced slip elements to ride over said longitudinally spaced cone elements to move said slip elements radially outwardly to engage the well bore.

4,497,369

HYDRAULIC CONTROL OF SUBSEA WELL EQUIPMENT

Gary L. Hurta, Houston; Lionel J. Milberger, Spring, and Alford M. Williams, Houston, all of Tex., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 13, 1981, Ser. No. 319,179

Int. Cl.³ E21B *7/12*

U.S. Cl. 166—368 **5 Claims**

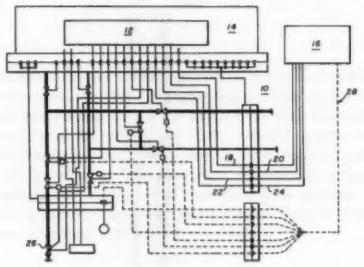
1. A subsea production control system for controlling the flow of product from a subsea well in accordance with a known program comprising:

(a) a plurality of valve means located at the site of the subsea well and operative for causing product to flow from the subsea well;

(b) surface control means located at a site remote from the site of the subsea well and operative for controlling said plurality of valve means to accomplish the flow of product from the subsea well;

(c) fluid means operatively connecting said surface control means to said plurality of valve means, said fluid means being operative to provide the fluid that supplies the power to operate said plurality of valve means;

(d) sequence valving means located at the site of the subsea well, said sequence valving means including a plurality of sequence valves, each of said plurality of sequence valves being connected in operative relation through said fluid means both to said surface control means and to at least a corresponding one of said plurality of valve means, each of said plurality of sequence valves being selectively positionable in a plurality of positions, said plurality of positions defining different operating modes of each of said plurality of sequence valves, each of said plurality of sequence valves embodying a constant force biasing means operative to bias the corresponding one of said plurality of sequence valves equipped therewith to one of



said plurality of positions thereof, when occupying said one of said plurality of positions thereof each of said plurality of sequence valves in response to the receipt thereof of a command unique thereto generated at said surface control means being movable against the bias of said constant force biasing means embodied thereby to another of said plurality of positions thereof thereby effecting the operation of the corresponding one of said plurality of valve means that is cooperatively associated therewith; and

(e) pilot means operatively connecting said surface control means to said plurality of sequence valves, said pilot means being operative to transmit a plurality of commands generated at said surface control means to said plurality of sequence valves, each of said plurality of commands being of unique character such that each of said plurality of sequence valves is caused to move to said another of said positions thereof when receipt is had thereby of a particular one of said plurality of commands.

4,497,370

APPARATUS AND METHOD FOR RECOVERY OF LIQUID HYDROCARBONS FROM GROUND WATER

Michael K. Breslin, 38 Caselli Ave., San Francisco, Calif. 94114

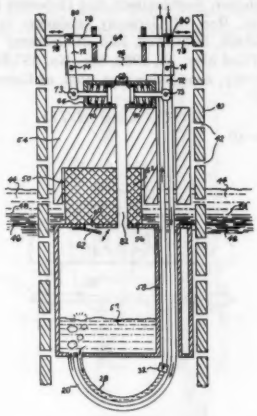
Filed Aug. 12, 1982, Ser. No. 407,514

Int. Cl.³ E21B *43/00*

U.S. Cl. 166—372 **45 Claims**

1. Apparatus for recovery of liquid hydrocarbons on ground water below ground level comprising: a plurality of well casings, the well casings being perforated and adapted to be driven into the ground through the interface between the liquid hydrocarbons and the ground water so that the liquid hydrocarbons can enter the well casings; a recovery unit for each well casing, respectively, each recovery unit including a housing for collecting liquid hydrocarbons, the housing having a semi-permeable membrane defining the outer surface thereof,

the membrane being pervious to the liquid hydrocarbons and impervious to the ground water, and a flotation member coupled with the housing to permit the latter to be floated on the ground water such that a portion of the housing intersects the interface between the liquid hydrocarbons and the ground



water; a conduit coupled with each recovery unit, respectively and adapted to be coupled to a fluid receiver remote from the recovery units for directing liquid hydrocarbons from the housing to the receiver; and means coupled with the recovery units for sequentially forcing the collected hydrocarbons from the recovery units to the receiver.

4,497,371

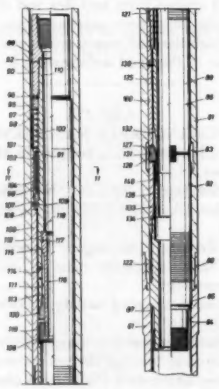
SETTING TOOL AND RETRIEVABLE LANDING ASSEMBLY

Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool and Supply Company, Midland, Tex.

Filed Jun. 16, 1981, Ser. No. 274,170

Int. Cl.³ E21B *23/04*

U.S. Cl. 166—377 **18 Claims**



1. A method of setting a retrievable landing assembly in a packer bore receptacle in a well bore comprising the steps of:

lowering a retrievable landing assembly and setting tool on a string of tubing through a string of pipe containing a packer bore receptacle until the retrievable landing assembly is sealingly received in the packer bore receptacle and is seated therein;

applying hydraulic pressure to said string of tubing to determine by a build-up of pressure that the retrievable landing assembly is properly seated in the packer bore receptacle,

opening a valve in the setting tool to permit circulation of liquid between the setting tool and packer bore receptacle above the sealing elements on the packer bore receptacle and dropping a sealing ball through the tubing string to seal off the cross-section of the setting tool so that a setting force may be applied to the retrievable landing assembly;

applying hydraulic pressure to said tubing string after the ball is seated in the setting tool for actuating said setting tool and said retrievable landing assembly;

disconnecting said setting tool from the retrievable landing assembly after the actuation of the retrievable landing assembly and retrieving said setting tool.

4,497,372

ANTI-TWIST CONTROL SYSTEM FOR DEVIATED CONDUCTOR DRIVING SYSTEMS

James K. Simpson, New Orleans, La., assignor to Gurtler, Hebert & Co., Inc., New Orleans, La.

Filed Jun. 7, 1983, Ser. No. 499,976

Int. Cl.³ E21B *7/08*

U.S. Cl. 166—381 **5 Claims**

1. A method for countering any undesired twisting of a deviated conductor which is to be deviated in a desired direction as it is driven into a substratum from an offshore platform through one or more conductor guides mounted on the platform structure, comprising the following steps:

a. providing at least one bar stop on and extending inwardly and radially from the inner surface of at least one conductor guide and at least one corresponding bar stop on and extending outwardly and radially from the outer surface of the conductor casing, with the inward extent of the bar stop of the conductor guide and the outward extent of the bar stop of the conductor casing over-lapping; and

b. positioning the conductor casing in the conductor guide with their respective bar stops relatively positioned so that they come into side-to-side contact when the conductor casing attempts to twist away from its desired targeted deviation direction in said conductor guide.

4,497,373

FIRE AND EXPLOSION DETECTION AND SUPPRESSION

Robert L. Farquhar, Reading, England, assignor to Graviner Limited, High Wycombe, England

Filed Aug. 3, 1982, Ser. No. 404,726

Claims priority, application United Kingdom, Aug. 20, 1981, 8125485

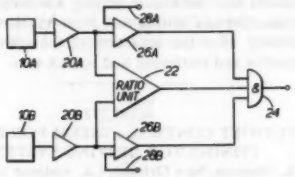
Int. Cl.³ A62C *3/00*

U.S. Cl. 169—45 **20 Claims**

1. A fire and explosion detection system responsive to radiation from fires and explosions and capable of discriminating between a first case in which radiation is produced from a source of fire and explosion in the presence of a flammable substance before it commences to burn and a second case in which radiation is produced therefrom in the absence of the

flammable substance, so as to produce an alarm signal in the first case but not in the second case, comprising

first and second radiation detection means arranged to produce electrical signals in response to radiation received in respective narrow wavelength bands, the wavelength band of the first radiation detection means being a band in which the said flammable substance absorbs radiation from the said source, and the wavelength band of the



second radiation detection means being a band not associated with absorption by the flammable substance of radiation from the said source, and

output means comprising means for comparing the electrical signals of the two detection means whereby to produce a said alarm signal indicative of the said first case when the comparison indicates that the signal from the first detection means is relatively low compared with the signal from the second detection means.

4,497,374

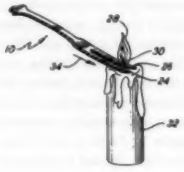
CANDLE SNUFFER AND METHOD

William G. Millar, 124 Arlington Rd., Utica, N.Y. 13501

Filed May 23, 1983, Ser. No. 497,361

Int. Cl.³ A62C *3/00*

U.S. Cl. 169—46 **1 Claim**



1. A method of extinguishing the flame of a candle having a wick of predetermined thickness with a candle snuffer having a handle portion and a pair of elongated tines extending therefrom in spaced relation, the space between at least predetermined portions of said tines being not substantially greater than said predetermined wick thickness, said method comprising the steps of:

(a) moving said candle snuffer in a generally forward direction along the axis of said elongated tines to place a portion of said candle wick between the flame and the candle body between said predetermined portions of said tines; and

(b) moving said candle snuffer in a generally upward direction to draw said predetermined portions of said tines over the end of said wick, thereby extinguishing said flame.

4,497,375

FORCE MEASURING APPARATUS MOUNTED ON TRACTOR INCLUDING HALL SENSOR DETECTING DEFORMATION OF FLEX ROD TO CONTROL TRACTOR POWER HOIST

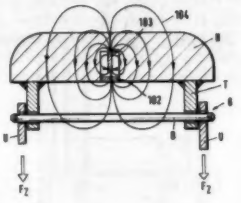
Norbert Mucheyer, Rechtenbach, and Hubertus Schmidt, Lohr, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 357,897

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110107

Int. Cl.³ A01B *63/112*

U.S. Cl. 172—10 **11 Claims**



1. A force measuring apparatus mounted on an agricultural tractor with a power hoist, said force measuring apparatus for controlling said power hoist wherein the force affecting a point on said power hoist is transferred to an elastic system which is elastically deformed, comprising:

a flex rod subjected to a bending moment introduced by a pair of lower hitches wherein said flex rod indicates a bending moment said lower hitches forming part of said power hoist;

at least one Hall sensor having its detector surface intersecting the plane of the main bend deformation of said flex rod in a region of maximum deflection thereof wherein the longitudinal axis of said rod is in said plane; and

a control circuit connected to the output of said Hall sensor for controlling said force; wherein

said Hall sensor is combined with a first magnet to form a single unit component securely attached to the rear of said tractor and spaced from said flex rod in such a way that the magnetic field lines starting from the magnet and going through the Hall sensor substantially exclusively lie in the plane of the bend deformation to be measured.

4,497,376

INTERCHANGEABLE RAM DIESEL PILE

George Kurylko, Hanover, N.J., assignor to MKT Geotechnical Systems, Dover, N.J.

Filed Aug. 2, 1982, Ser. No. 404,367

Int. Cl.³ F21B *7/00*; F01B *29/04*

U.S. Cl. 173—1 **3 Claims**

1. In a pile driving diesel-engine hammer adapted to be provided with interchangeable rams to drive a pile into a foundation comprising:

an outer cylindrical casing having a combustion chamber therein,

at least two interchangeable rams of different weights, each having a piston at one end thereof to be slidably received in said casing above said combustion chamber,

at least one pair of air intake-exhaust ports provided in the wall of said outer cylindrical casing and in communication with said combustion chamber,

an anvil seated in the bottom of said outer cylindrical casing below said combustion chamber and said pair of air intake-exhaust ports,

a pile driving cap connected to said anvil, and

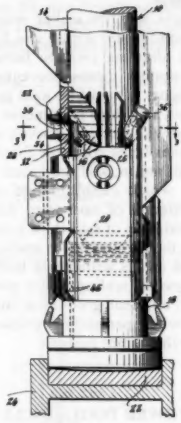
means on said outer cylindrical casing for introducing fuel into said combustion chamber for admixture with air

received through said air intake-exhaust ports in response to movement of a ram within said casing,

the improvement comprising:

means for plugging said intake-exhaust ports when the heaviest one of said rams is in said casing, and

an auxiliary and alternate air intake-exhaust means including an opening circumferentially spaced from said pair of air



intake-exhaust ports in the outer cylindrical casing and at a greater height above said anvil than said pair of air intake-exhaust ports for introducing air into said combustion chamber and for receiving the products of combustion expelled from said chamber when said plug means are inserted in said pair of air intake-exhaust ports and said hammer is in use with the heaviest one of said rams.

4,497,377

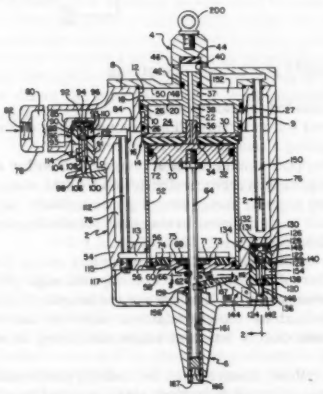
PNEUMATIC TOOL

Harry M. Haytayan, Lincoln, Mass., assignor to Pneutek, Inc., Hudson, N.H.

Filed Nov. 30, 1978, Ser. No. 965,107

Int. Cl.³ B25C *1/04, 5/02*

U.S. Cl. 173—15 **8 Claims**



1. A penumatic tool comprising:

a hollow housing having upper and lower ends;

a hollow cylinder mounted in said housing, said cylinder having upper and lower ends;

a piston slidably mounted in said cylinder;

a hammer connected to said piston and having a striking surface;

lower end means for closing off said lower ends of said cylinder and said housing, said lower end means having a first bore therein for slidably receiving said hammer;

an air reservoir defined within said housing, said housing having an inlet for connecting said reservoir to a regulated source of high pressure air;

a primer valve for alternately (1) transmitting high pressure air from said air reservoir to said lower end of said cylinder below said piston, or (2) exhausting high pressure air from said lower end of said cylinder below said piston;

selectively operable mechanical means for operating said primer valve;

a poppet valve for rapidly opening up or closing off said upper end of said cylinder above said piston, in order that high pressure air from said air reservoir may or may not be admitted rapidly to the upper end of said cylinder above said piston;

an elongate feeler rod mounted in said lower end means and adapted for movement between a first extended position and a second retracted position, said feeler rod extending substantially below said hammer when said piston is positioned at said upper end of said cylinder and said feeler rod is positioned in said first extended position, said feeler rod being arranged to be moved by an object from said first extended position to said second retracted position when said tool is engaged with said object;

a feeler-operated control valve disposed at least partly within said lower end means and adapted for alternately (1) transmitting high pressure air to said poppet valve so as to cause said poppet valve to close off said upper end of said cylinder above said piston when said feeler rod is in said first extended position, or (2) exhausting said high pressure air from said poppet valve so as to cause said poppet valve to open up said upper end of said cylinder above said piston when said feeler rod is in said second retracted position, in order that said piston may be driven from said upper end of said cylinder to said lower end of said cylinder when and only when (1) said primer valve has exhausted high pressure air and (2) said feeler-operated control valve has exhausted said high pressure air from said poppet valve so as to cause said poppet valve to open up said upper end of said cylinder above said piston to the high pressure air of said air reservoir, said primer valve and said feeler-operated control valve being operable independently of one another.

4,497,378

DRILLING AND BOLTING TURRET

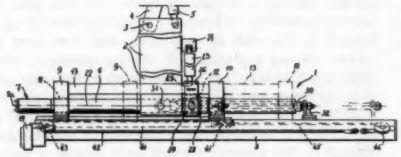
Gilbert Beney, Meyzieu, and Michel Combet, Beynost Miribel, both of France, assignors to Eimco-Secoma Societe Anonyme, Meyzieu, France

Filed Feb. 1, 1983, Ser. No. 462,989

Claims priority, application France, Feb. 2, 1982, 82 02109

Int. Cl.³ E21C *11/00*

U.S. Cl. 173—32 **19 Claims**



1. A drilling and bolting turret comprising:

a support having two ends, one of said ends being connectable to an arm for positioning the turret;
a first cylindrical member mounted on said support at the other end thereof and formed at one of its extremities with an anchoring point adapted to be seated in a wall for preventing rotation of said first cylindrical member;
a pair of bearings axially spaced apart and rotatable on said first cylindrical member while being axially slidable therealong;
a girder fixed on said bearings and extending parallel to said first cylindrical member;
a drilling carriage longitudinally shiftable on said girder for drilling a hole in said wall, and a bolting carriage longitudinally shiftable on said girder for inserting a bolt in a hole drilled by said drilling carriage;
means on said girder for longitudinally shifting said carriages therealong;
means for longitudinally sliding said girder relative to said support;
a second cylinder member fixed to said bearings and movable therewith upon axial displacement of said bearings and said girder relative to said first cylindrical member;
a connecting element swingably mounted on said first cylindrical member and slidably receiving said second cylindrical member; and
a fluid-responsive piston-and-cylinder arrangement operatively connected to said support and said connecting element for angularly displacing the connecting element about the axis of said first cylinder member, thereby rotating said turret about said axis and selectively positioning said carriages with respect to said wall.

4,497,379

MODULAR PIVOTAL FLUIDIC JOINT SYSTEMS AND COMPONENTS THEREOF

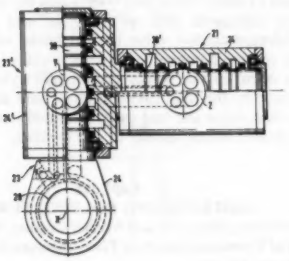
Pierre Mailliet, and Edgar Kraemer, both of Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Oct. 22, 1981, Ser. No. 313,780

Claims priority, application Luxembourg, Nov. 17, 1980, 82942

Int. Cl.³ F17D *1/00*

U.S. Cl. 173—39 **31 Claims**



1. A multi-path rotatable fluid coupling to which fluidic pressure lines are secured comprising:
first joint means, said first joint means including a body portion having a cylindrical bore, said first joint means having a plurality of spacially separated annular grooves formed in the wall of said bore, said first joint means further having a plurality of internal passages, said passages establishing fluid communication between said annular grooves and the exterior of said first joint means, said first joint means further having a cylindrical extendion, said extension having a plurality of annular grooves formed on the exterior thereof, said extension having an axis which is oriented transversely with respect to the axis of said bore;
second joint means, said second joint means having a body portion and a cylindrical extension, said extension being sized to be rotatably fitted within said bore of said first joint means, said second joint means being provided with internal pssages extending between the exterior of said body portion and the exterior of said extension, the terminations of the passages at the exterior of said extension, the terminations of the passages at the exterior of said extension being in registration with said annular grooves of said first joint means;
first sealing means, said first sealing means fluidically sealing said second joint means within said bore of said first joint means while allowing rotation between said first joint means, said sealing means preventing leakage of fluid between adjacent of said first joint means grooves;
third joint means, said third joint means having a cylindrical bore provided with annular grooves, said extension of said first joint means being rotatable fitted within the bore of said third joint means, said third joint means having internal passages which establish fluid communications between the exterior of said third joint means and said grooves in said bore of said third joint means; and
second sealing means fluidically sealing said extension of said first joint means within said bore of said third joint means, said second sealing means preventing leakage of fluid between adjacent grooves of the bore of said third joint means while permitting relative rotation between said first and third joint means.

4,497,380

HAND-HELD POWER TOOLS INCLUDING BEARING SUPPORTS FOR COMPONENTS UNDERGOING LINEAR MOVEMENT

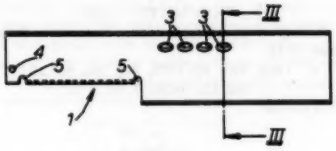
John H. Flack, deceased, late of Uxbridge, England (by Margaret A. Flack, administrator), and Frank F. Simpson, Staines, England, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 16, 1982, Ser. No. 389,142

Claims priority, application United Kingdom, Jun. 17, 1981, 81.18671

Int. Cl.³ F16C *5/00*

U.S. Cl. 173—117 **8 Claims**



1. A hand-held power tool, comprising:
a housing;
a motor mounted in said housing;
a component for undergoing linear reciprocating movement for actuating a tool member when present;
a bearing support mounted in said housing and within which said component is reciprocally driven by said motor;
said bearing support comprising a guide cylinder of sheet metal, said guide cylinder having been formed from a strip of the sheet metal;
said guide cylinder having a gap extending along the full length thereof and defined by two opposed edge portions of said sheet metal, at least part of the length of said gap being defined by closely adjacent edges of said sheet metal, said closely adjacent edges not being in actual contact;
said guide cylinder being able to flex radially due to said gap and to being formed from sheet metal in order to accommodate said component therewithin;
said guide cylinder having a cut away portion at one end to accommodate a reciprocating drive connection between said component and said motor, said cut away portion

defining a substantially wider portion of said gap than said at least part defined by said closely adjacent edges; and

said cut away portion having turned over longitudinal edges comprising guide surfaces for a part of said reciprocating drive connection.

4,497,381

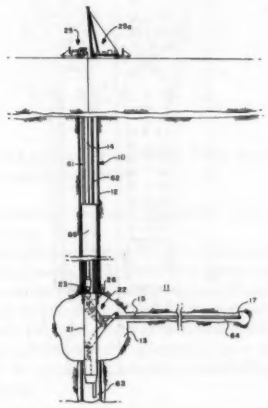
EARTH DRILLING APPARATUS AND METHOD

Ben W. O. Dickinson, III, San Francisco; Robert W. Dickinson, San Rafael; Irving L. Odgers, Loomis, and James McGhee, Berkeley, all of Calif., assignors to Bechtel National, Inc., San Francisco, Calif.

Filed Mar. 2, 1983, Ser. No. 471,431

Int. Cl.³ E21B *7/08, 7/18*

U.S. Cl. 175—61 **13 Claims**



1. Earth well drilling apparatus comprising a structure adapted to be positioned within a well adjacent a mineral producing region, piping in the well to which the structure is secured, a drilling tube of the solid metal wall type disposed within the piping, means for applying hydraulic liquid under pressure to the piping and tube, a drilling head of the hydraulic jet type secured to the lower end of the tube, means forming a seal between the piping and the tube, the tube and drilling head being urged downwardly through the piping when hydraulic pressure is applied to the same, tube bending means carried by the structure, said bending means being laterally extensible from a retracted position substantially within the configuration of the structure and serving when extended and when hydraulic pressure is applied to the tube to propel the same downwardly through the piping and bending means to bend the tube and to direct the tube and drilling head laterally toward the formation.

4,497,382

RETRACTABLE CORE DRILL BIT

Nikolay D. Nenkov, Sofia, Bulgaria, assignor to Komitet po Goelogica, Sofia, Bulgaria

Filed Mar. 24, 1983, Ser. No. 478,486

Int. Cl.³ E21B *10/64*

U.S. Cl. 175—260 **1 Claim**

1. In a retractable core drill bit having an upper end and a lower end, said drill bit containing an outer tube and a unitary core drill bit fitted to the lower end of the outer tube, above said unitary core drill bit there being affixed to the outer tube cutting components, the improvement which comprises a hollow cylindrical body housed within the outer tube, the unitary core drill bit being screwed to the lower end of said hollow cylindrical body and a strip nut being affixed to the upper end thereof, said stop nut having its both ends in the form of opposite chucks, wherein the middle of the hollow cylindrical body there are pivotally attached said cutting components and longitudinal slots are formed between these cutting components, inside the hollow cylindrical body there being a spacer the upper portion of which is connected to an end piece and the hollow cylindrical body being enveloped by

a guiding sleeve which is in contact with a supporting sleeve enveloped by an external end piece in which the cutting components are affixed in slots positioned one opposite the other in planes which are disposed perpendicular to each other on the lower end of the hollow cylindrical body.

4,497,383

UNDERCUTTING DEVICE FOR ANCHOR HOLES

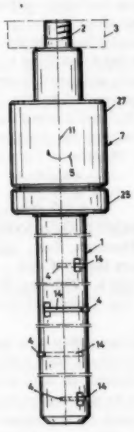
Alfred Ostertag, Celle, Fed. Rep. of Germany, assignor to Norton Company, Worcester, Mass.

Continuation of Ser. No. 405,498, Aug. 5, 1982, abandoned. This application May 14, 1984, Ser. No. 609,527

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119605

Int. Cl.³ E21B *7/28*

U.S. Cl. 175—289 **20 Claims**



1. A device for undercutting a wall about a bore hole comprising:

a rotatable tubular support housing adapted for insertion into a

bore hole, to be coupled to and rotated by rotary drive means, and having

at least one circumferential guide slot including an entrance thereto situated between axially spaced slide surfaces extending circumferentially in a portion of the support housing and inwardly from the entrance to the circumferential guide slot, and

pull type connector means including at least one bearing pocket with a peripheral side entrance and a driving trailing side surface, of the support housing, adjoining the bearing pocket and facing in a leading working direction of the support housing, adjoining and extending inwardly from the peripheral side entrance and axially from one of the slide surfaces and situtated solely at a leading end portion of the circumferential slot whereby the support housing is adapted to receive, support, engage, guide and pull around at least one cutting tool insertable and swivelable in the guide slot from a retracted position outside the cross sectional contour of the support housing and back to the retracted position;

a cutting tool including a cutting member and a pivot lever supporting the cutting member on a trailing end portion thereof, slideably mounted in between the slide surfaces of the tubular support housing, swivelable inwardly and outwardly in a plane of motion that intersects with the support housing and which has

a pull type connection with the support housing only at its leading end portion which precedes the cutting member during rotation in a working rotational direction by a predetermined circumferential distance, including at least one stud extending axially from the leading end portion and inserted, by way of the side entrance, into the bearing pocket and the stud having

a side surface extending toward the working rotational direction and away from the driving trailing side surface and a portion of the stud drivingly engaged by the driving trailing side surface which during rotation exerts on the stud a reaction force with an inwardly directed vector relative to the support housing whereby the cutting tool is easily removed and replaced solely by way of the side entrance, constantly forced inwardly toward the retracted position, pulled around by the support housing and placed in tension during a cutting operation;

positioning means in the support housing and operable from a region of the device outside the bore hole for positioning and moving the cutting tool into cutting engagement with the bore hole wall including

a feed control rod axially displaceable in the tubular support housing and having a camming surface adapted for engaging and displacing the pivot lever; and

actuating means supported by the support housing for axially displacing the feed control rod relative to the housing and thereby adjusting the position of the pivot lever and cutting member thereon in the plane of motion.

4,497,384

REAMER DISASSEMBLY

Lawrence D. Hart, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jan. 4, 1982, Ser. No. 336,804

Int. Cl.³ E21B *12/00*

U.S. Cl. 175—315 **12 Claims**

1. Apparatus for disassembly of a wall contacting device, such device having a body with a socket therein and a block making an interference fit with the socket and removable out of the socket by movement in a certain direction, said block having a part facing away from the direction the block must move for removal from the socket,

said apparatus comprising:

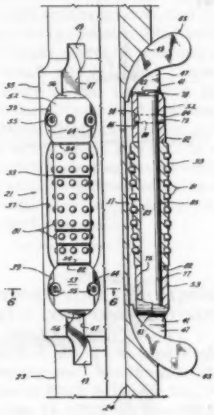
passage means in such device via which a disassembly tool can be placed for exerting force on the block to effect such removal,

a disassembly tool removably received in said passage means,

said tool having a pressure portion engaged with said part of the block and a head portion exposed to the exterior of the device for receiving force, and

cooperting guide means on the body and tool for guiding the tool to impart a certain motion thereto to keep said pressure portion engaged with said part of the block as the block moves out of the socket in response to force applied to said head,

said certain motion consisting of rotation in parallel planes, perpendiculars to which are transverse to said certain direction of movement of the block,



said cooperating guide means comprising surfaces on said body and tool both of which surfaces are cylindric about a common axis perpendicular to said planes,

the radial distance from said axis of each of said surfaces being a constant and the radial distance of one of said surfaces from said axis being equal to the radial distance of the other of said surfaces from said axis,

said cylindric surface of the body supporting the tool over the area of engagement of said cylindric surfaces during motion of the tool to resist galling and gouging,

said certain motion of said tool during block removal being pure rotation about the axis of said cylindric surfaces, tending to prevent translatory rebound upon sudden application of force to the head portion of the tool, said axis of rotation being stationary relative to said tool passage.

4,497,385

COMBINATORIAL WEIGHING APPARATUS

Takashi Sashiki, Nagaokakyo, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Aug. 18, 1982, Ser. No. 409,298

Claims priority, application Japan, Aug. 18, 1981, 56-122914[U]; Aug. 18, 1981, 56-122915[U]; Sep. 4, 1981, 56-132244[U]

Int. Cl.³ G01D *19/32*

U.S. Cl. 177—59 **13 Claims**

1. A combinatorial weighing apparatus, comprising:

a distribution table for distributing material to be weighed that is supplied thereto;

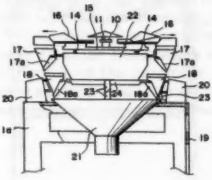
distribution supply devices arranged radially around said distribution table and positioned to received said material distributed by said distribution table;

hoppers fixedly positioned below said distribution supply devices and positioned to received said material from said distribution supply devices;

weight sensors coupled to said hoppers to weigh the material in the associated hoppers;

computing means, operatively connected to said weight sensors, for computing the total weight of the material for various combinations of hoppers and selecting the best combination of hoppers which provides a total weight most closely approximating a preset target weight within a predetermined tolerance; and

hopper drive means, operatively connected to said computing means and engagable with said hoppers, for driving said hoppers on the basis of the best combination thereby to let the hoppers of said best combination discharge said



material, said hopper drive means being surrounded by said hoppers and comprising:

a motor;

lever mechanisms for and engagable with respective hoppers; and

transmission mechanisms, coupled to said motor and said lever mechanisms, for respective hoppers and for selectively transmitting the output torque of said motor to said lever mechanisms, where said transmission mechanisms selected on the basis of said best combination are operated to activate the associated lever mechanisms thereby to open said hoppers constituting said best combination.

4,497,386

WEIGHING APPARATUS INCLUDING IMPROVED FORCE-TRANSMITTING LEVER MEANS

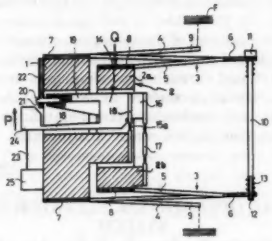
Eugen Meier, Meilen, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Dec. 27, 1982, Ser. No. 453,103

Claims priority, application Switzerland, Jul. 16, 1982, 4337/82

Int. Cl.³ G01G *3/08, 23/02*

U.S. Cl. 177—229 **8 Claims**



1. Weighing apparatus of the short-stroke type, comprising

(a) a console member (**1**);

(b) a load-receiving member (**2**);

(c) resilient parallel guide means (**3**) connecting said load-receiving member with said console member for vertical displacement relative thereto;

(d) short-travel movement measuring means (**23**) connected at one end with said console member;

(e) force transmitting lever means (**14**) connecting the other end of said measuring means with said load-receiving member, including

(1) a multi-arm lever (**14**) including a rigid first arm (**19**);

(2) pivot means (**15**) connecting said lever with said console for pivotal movement about a horizontal pivot axis (**15*a***), said lever including a resilient second arm (**18**) connected with the other end of said measuring means; and

(3) means connecting said lever with said load receiving member, whereby vertical displacement of said load-receiving member is transmitted to said measuring means via said resilient second arm; and

(f) stop means (**20**) cooperating with said rigid first arm for limiting the extent of pivotal travel of said lever about its pivot axis.

4,497,387

TRANSFORMER WITH SMOOTH-WALLED TANK

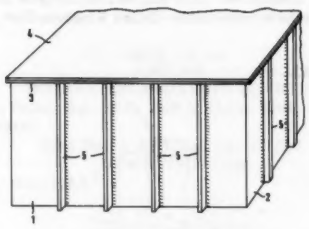
Erich Reiplinger, Nuremberg, Fed. Rep. of Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,750

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135420

Int. Cl.³ H02K *5/24*

U.S. Cl. 181—202 **6 Claims**



1. Transformer having an active part thereof disposed in an oil-filled, smooth-walled tank having side walls braced by ribs secured by welding and subdivided into wall-high panels, the panels, respectively, comprising a sheetmetal wall having a resonance frequency f_o smaller according to the function $f_o=(S \cdot k_f)/B^2$ than twice the main electric power line frequency, wherein S is the thickness of the sheetmetal in cm, B the net panel width in cm, and k_f a constant having an absolute magnitude which depends upon the length-to-width ratio of the panel, upon the modulus of elasticity, upon the transverse contraction and upon the specific gravity of the material used therefor.

4,497,388

PULSATION DAMPENER AND ACOUSTIC ATTENUATOR

Edwin Dexter, South Brooksville, Me., assignor to Gaulin Corporation, Everett, Mass.

Continuation-in-part of Ser. No. 296,228, Aug. 25, 1981, abandoned. This application Dec. 3, 1981, Ser. No. 327,131

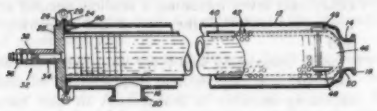
Int. Cl.³ F16L *55/02*

U.S. Cl. 181—233 **15 Claims**

1. A pipeline pulsation dampener of the type mounted in series with a pipeline for flow of liquid through the dampener, comprising:

a housing comprising a single tubular member having ports for connecting the housing in series with the pipeline one port extending through a side of the housing near a first end thereof to cause a significant change in direction of liquid flow at that port and the other port being centered at a second end of the housing;

a restraining screen member enclosed entirely within the housing with an annular orifice provided at the second port between the housing and a closed nose of the restraining screen; and



a deformable bladder, within the screen, containing a pressurized fluid, the bladder being attached to only the first end of the housing and being removable from the housing through that end while the housing is connected at the ports to the pipeline.

4,497,389

METHOD OF ERECTING DROP SCAFFOLDING, A DROP SCAFFOLDING STRUCTURE, AND A SCAFFOLD COUPLING THEREFOR

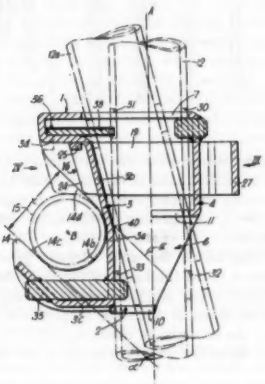
Joseph E. Whitlam, Barnsley; Alwyn H. Richards, Pontefract, and Brian Akers, Sheffield, all of England, assignors to Whitlam Holdings Limited of Low Valley Industrial Estate, Barnsley, England

Filed Nov. 13, 1981, Ser. No. 320,888

Claims priority, application United Kingdom, Nov. 19, 1980, 8037144

Int. Cl.³ E04G *3/10*

U.S. Cl. 182—150 **13 Claims**



1. A method of erecting drop scaffolding comprising; taking first and second drop tubes, each drop tube having a top coupling secured by first securing means to an upper part thereof against axial movement relative thereto, and a bottom coupling secured by the second securing means to a lower part thereof against axial movement relative thereto, each top coupling having a cradle with an opening directed generally downwardly and each bottom coupling having a cradle with an opening directed generally upwardly; hooking the top coupling of each drop tube to a horizontal support tube that is secured against vertical movement, the support tube extending transversely of the drop tubes, while the drop tubes are inclined at an acute angle to the vertical; swinging the trapeze-like structure formed by the drop tubes and a scaffold tube extending transversely between said drop tubes parallel to said horizontal support tube and releasably secured in the cradles of the two bottom couplings so that said drop tubes move from said inclined position to hang vertically from the horizontal support tube; and releasably securing the top couplings to the horizontal support tube.

4,497,390

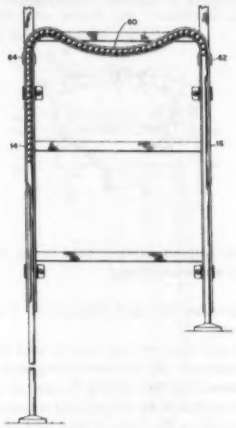
SELF-ADJUSTING LADDER

Frederick D. Wilson, 630 Ramsier Dr., Hendersonville, N.C. 28739

Filed May 23, 1983, Ser. No. 497,121

Int. Cl.³ E06C *7/44*

U.S. Cl. 182—202 **1 Claim**



1. A mechanism for making a ladder self-adjusting, comprising:

a U-shaped hollow tubular member adapted to be rigidly coupled to the bottom portion of the ladder, the tubular member including a pair of parallel channels and a bridge channel connecting the tops of the parallel channels, said bridge channel being flexible so that the mechanism may be utilized with ladders of varying widths; a pair of rods slidably received in each of said parallel channels, a plurality of balls movably received in said bridge channel and said parallel channels, said balls not being coupled to one another and adapted to freely and independently roll in said channels, the inside surfaces of said channels where said balls are located are substantially smooth, the far ends of each of said rod adapted to contact normal supporting surfaces for the ladder, a portion of each rod extending from the open end of the respective channel, the length of the portion of each rod which extends from the open end of each of said channels depending upon the relative level of the respective surface of which each of said rod contacts, said mechanism providing infinite levels of adjustment over its total range of adjustment.

4,497,391

MODULAR OPERATIONAL ELEVATOR CONTROL SYSTEM

Arnold Mendelsohn, Simsbury; Joe K. Koe, Avon, both of Conn., and Gregory Schienda, Tuscon, Ariz., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 27, 1983, Ser. No. 546,225

Int. Cl.³ B66B *3/00*

U.S. Cl. 187—29 R **5 Claims**

1. A control system for controlling communication between passengers and an elevator controller including fixtures for providing passenger request signals in response to passenger service requests and for providing displays to the passengers indicative of status signals from the controller, and means for communicating the passenger request signals from the fixtures

to the controller and for communicating the status signals from the controller to the fixtures, comprising:

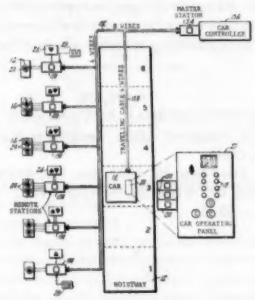
a transmission line;

a portion of the controller dedicated to the control system for controlling communication between the passengers and the remainder of the controller for providing clock pulses on the transmission line to mark time slots in a transceive cycle of a time-division, half-duplex multiplex protocol; and

a master station, connected between the portion of the controller and the transmission line, comprising:

first counter means for providing first receive cue signals during assigned time slots in response to the clock pulses and for providing first transmit cue signals during assigned other time slots in response to the clock pulses;

first output switch means for providing the passenger request signals from the transmission line in serial format to the portion of the controller on first parallel output lines in a system receive mode in response to the first receive signals according to the multiplex protocol; and



first input switch means for providing the status signals from the portion of the controller on first parallel input lines to the transmission line in serial format in a system transmit mode in response to the first transmit signals according to the multiplex protocol;

remote stations, each connected between the fixtures and the transmission line and comprising:

second counter means for providing second receive cue signals during an assigned time slot in respose to the clock pulses and for providing second transmit cue signals during an assigned other time slot in response to the clock pulses;

second input switch means for providing the passenger request signals from the fixtures on second parallel input lines to the transmission line in serial format in the system receive mode in response to the second receive cue signals according to the multiplex protocol; and

second output switch means for providing the status signals from the transmission line in serial format to the fixtures on second parallel output lines in the system transmit mode in response to the second transmit cue signals according to the multiplex protocol.

4,497,392

RAIL VEHICLE DISC BRAKE CALIPER

Bo G. Stensson, Brösarp; Lars M. Severinsson, Hishult, and Bo Lundström, Helsingborg, all of Sweden, assignors to SAB Nife AB, Landskrona, Sweden

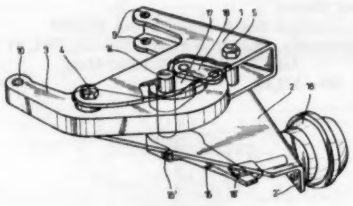
Filed Mar. 29, 1983, Ser. No. 480,108

Claims priority, application Sweden, Apr. 5, 1982, 8202163

Int. Cl.³ B61H 5/00

U.S. Cl. 188—59 **4 Claims**

1. A rail vehicle disc brake caliper arrangement for actuating a braking disc on the rail vehicle comprising in combination, a brake caliper including a base frame having a pivotally attached caliper lever extending therefrom to operate in a caliper plane and adapted to carry brake pads on opposite sides of said braking disc, a slack adjuster with a worm wheel for positioning a rotatable shaft thereof pivotally arranged in the base frame adjusting differences of slack during brake pad wear by small relative rotary movements of the worm wheel and shaft



and having an actuating lever arm disposed to rotate said shaft, means mounting said slack adjuster in said frame with said lever arm disposed to move in a plane substantially parallel to the caliper plane, means connecting a fluid actuated brake cylinder to rotate the slack adjuster actuating lever arm for braking, and coupling means coupling the slack adjuster rotatable shaft to pivot said caliper lever in response to both the brake cylinder braking and the slack adjuster adjustments.

4,497,393

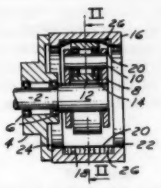
ROTARY RETARDATION DEVICES

John H. Brems, Apt. 16-D, 2800 S. Ocean Blvd., Boca Raton, Fla. 33432

Filed Dec. 4, 1981, Ser. No. 327,515

Int. Cl.³ F16F 9/10

U.S. Cl. 188—322.5 **2 Claims**



1. In a rotary device for angular velocity control in which the retarding torque is substantially proportional to the angular velocity, and which utilizes the deformation of a viscous fluid to create said retarding torque, a construction which includes:

(a) a first torque member,

(b) a second torque member mounted for unlimited rotation relative to said first torque member in a clockwise or counter-clockwise direction, and

(c) a rotating member mounted on one of said torque members for rotation relative to the other of said torque members, and

that improvement which comprises an annular shallow cavity formed in one of said members having on open side, and a flexible deformable membrane diaphragm overlying said open side to close said cavity, said diaphragm being sealed to the open side of said cavity, and a quantity of viscous fluid in said sealed cavity, said membrane being in contact with a rotating path of one of said torque members,

whereby a relative rotational movement between said first and second torque members creates a progressive deflection of said diaphragm between said rotating member and

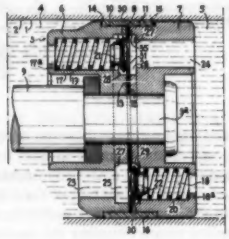
one of said torque members causing a progressive shearing of said viscous fluid thereby creating a retarding torque between said first and second torque members.

4,497,394

PISTON HAVING VALVES FOR A DAMPER

Michel Ferrand, Montbeliard, and Maurice Durupt, Bavans, both of France, assignors to Automobiles Peugot/Automobiles Citroen, France

Filed Sep. 8, 1982, Ser. No. 416,023
Claims priority, application France, Sep. 23, 1981, 81 17908
Int. Cl.³ F16F *9/34*; F15B *15/22*
U.S. Cl. 188—322.15 **7 Claims**



1. In a piston structure for in particular a damper, the piston structure comprising a rod, a central element fixed on the rod and two lateral elements fixed on the rod axially on opposite sides of the central element, the central element, the lateral elements and the rod being coaxial, the central element and the lateral elements being distinct elements in axially adjoining relation defining aligned passages axially in the extension of one another and circumferentially spaced apart, valve members for closing the passages and received in the lateral elements and respectively cooperative with valve seats defined by the central element on opposite sides of the central element; the improvement wherein the central element is a thin disc clamped between the two lateral elements and having a diameter which is less than a maximum diameter of the piston structure and at least one of the two lateral elements carries a guide ring on the periphery of said one lateral element for guiding sliding contact with a cylinder in which the piston structure is intended to operate.

4,497,395

ANTI CREEP VEHICLE BRAKING SYSTEM ALLOWING FURTHER ADDITIONAL BRAKING ACTION APPLICATION

Takahiro Nogami; Shigetaka Akahori; Harumi Oohori, and Nobuyasu Nakanishi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 22, 1982, Ser. No. 350,571
Claims priority, application Japan, May 22, 1981, 56-74977; May 22, 1981, 56-78235; May 22, 1981, 56-79732
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **12 Claims**

1. An anti creep braking system for a vehicle, comprising: a brake pedal movable to and fro with respect to said vehicle and adapted to be moved in a first direction by a vehicle operator in order to generate braking force;

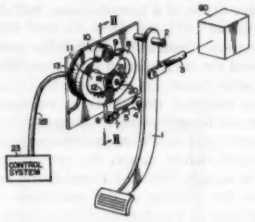
a braking force generation system drivingly connected with said brake pedal and adapted to generate a braking force that brakes said vehicle with increased intensity when said brake pedal is moved more in said first direction;

a brake holding member movable with respect to said vehicle; a one way clutch;

a braking device which selectively allows or prevents the movement of said brake holding member with respect to said vehicle;

and a control system for controlling said braking device so as selectively to allow to prevent the movement of said brake holding member with respect to said vehicle;

said brake holding member being drivingly connected with said brake pedal via said one way clutch to be moved with respect to said vehicle, the sense of force transmission of



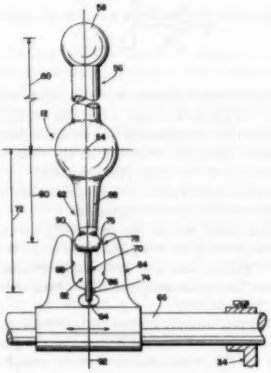
said one way clutch being such that said brake pedal can move freely with respect to said brake holding member in said first direction but any movement of said brake pedal in a direction opposite to said first direction is transmitted to said brake holding member via said one way clutch.

4,497,396

VARIABLE MECHANICAL ADVANTAGE SHIFT LEVER

Alan R. Davis, Plainwell, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1982, Ser. No. 419,851
Int. Cl.³ F16D *23/06*; G05G *9/12, 7/04*
U.S. Cl. 192—53 E **17 Claims**



1. In combination a lever and a member to be selectively moved substantially axially against a resistance, said combination comprising:

a first class lever having a first fixed length lever portion extending from a selectively moved end to a substantially fixed pivot point and a second variable effective length lever portion engagable with said member to be axially moved, said second lever portion engagable with said member to be moved at a first and at a second contact point, said first point more distant from said pivot point than said second point, and

resiliently deflectable means associated with one of said second lever portion and said member to be axially moved for causing said second lever portion to resiliently engage said member to be moved at said first point and preventing said second lever portion from engaging said member to be moved at said second point when said resistance to said axial movement is less than a predetermined value, said

resilient means resiliently deflectable to allow said second lever portion to solidly contact said member to be moved at said second point when said resistance to axial movement is at least equal to said predetermined value.

4,497,397

CLUTCH CONTROL SYSTEM

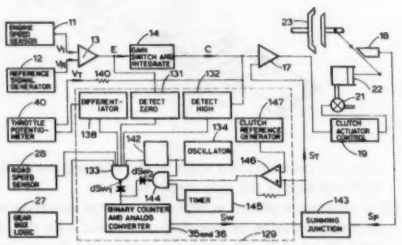
Harry M. Windsor, Harbury, and Andrew J. Mallion, Leamington Spa, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Feb. 19, 1982, Ser. No. 350,284

Claims priority, application United Kingdom, Feb. 24, 1981, 8105845; Apr. 8, 1981, 8111079; Nov. 8, 1981, 8130418

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.076 **17 Claims**



1. A vehicle electronic control system for a rotary transmission clutch and which includes:

a reference signal generator;

a clutch position signal generator means which is response to vehicle operating parameters, means for deviving an error signal from an output of the reference signal generator and an ouput of the clutch position signal generator and;

an inverting integrator which receives the error signal and the output of which forms a command signal which dictates the state of engagement of the clutch;

a clutch actuator for operation of the clutch;

a clutch actuator control means responsive to the command signal and which controls the operation of the actuator and which includes a comparator responsive to the command signal and a transducer responsive to the position of the clutch and which produces a feedback signal which is fed into the comparator for comparison with the command signal; and

a wear compensator means that modifies the feedback signal to alter said feedback signal as the clutch wears, the wear compensator means comprising a first detect means connected to the integrator input for sensing a given error signal voltage and which produces an output signal for control of a first AND gate, a second detect means connected to the integrator output for sensing when the command signal has passed a threshold value and which also produces an output signal for command of the first AND gate, and a wear signal generator means controlled by the first AND gate for producing a wear signal, said wear signal being summed with the feedback signal.

4,497,398

FLUID OPERATED CLUTCH OR BRAKE

Kirtkumar R. Patel, North Royalton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 7, 1982, Ser. No. 433,333

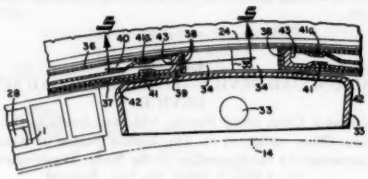
Int. Cl.³ F16D *25/04, 49/14*

U.S. Cl. 192—88 B **4 Claims**

1. A brake or clutch comprising:

two relatively rotatable structures adapted for torque-sustaining frictional engagement with each other and arranged one radially inside the other, one of said structures comprising a hollow fluid-distensible resilient annular tube having an annular torque-sustaining wall of cord reinforced rubber-like material which is positioned to be forced radially toward the other of said structures by internal fluid pressure in the tube,

said tube being split tranversely to form abutting walls both formed by a block of rubber-like material,



a U-shaped boot positioned adjacent each block with the open end facing away from said abutting walls and cord reinforced plies ends folded around the closed end of said boot, and a restraining member extending across the juncture of said abutting walls and circumferentially of said tube substantially beyond the ends of said boot to thereby limit the flexing of the boot.

4,497,399

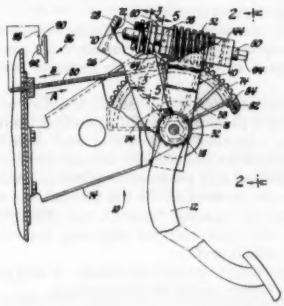
ADJUSTING MECHANISM FOR A MANUALLY OPERATED CLUTCH

Leonard F. Kopich, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1982, Ser. No. 446,715

Int. Cl.³ F16D *13/75*

U.S. Cl. 192—111 A **2 Claims**



1. A clutch adjustment mechanism for a manually operated vehicle clutch having a control cable subject to increased clutch applying spring force when clutch misadjustment is present and a manual pedal pivotally mounted on a bracket secured to the vehicle, said mechanism comprising; a toothed sector resiliently connected to the manual pedal and secured to one end of the control cable; a housing pivotally mounted on the bracket; a shaft slidably and rotatably disposed in said housing with at least one end thereof extending through one end of the housing; a worm disposed on the shaft for rotation therewith and being in mesh with said toothed sector; a two member one-way jaw clutch disposed between said worm and the one end of the housing with one member of the clutch being secured to said shaft and the other member being rotatably disposed on said shaft; and torque arm means secured between said housing and said other member for rotating said other member as said other member is moved linearly with said shaft relative to said housing when said jaw clutch is engaged; said jaw clutch being operable to transmit rotation in one

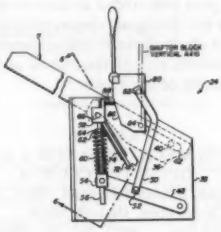
direction only to said worm through said shaft, said cable being operable when the vehicle clutch is engaged to rotate said sector relative to said pedal when said clutch is misadjusted to move said worm and shaft resulting in engagement of said jaw clutch and operation of said adjustment mechanism, and said manual pedal contacting said shaft for linear movement thereof toward disengagement of said jaw clutch when said vehicle clutch is disengaged thereby permitting indexing of said jaw clutch.

4,497,400

LOAD-UNLOAD DEVICE—LIMIT OVERLOAD SENSING DEVICE

Stanislaus J. Otto, Silver Spring, Md., and Verle L. Doty, Harrison, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 7, 1983, Ser. No. 464,224
Int. Cl.³ B65G *17/12, 43/00*
U.S. Cl. 198—468 **8 Claims**



1. An unload device for receiving articles from spaced apart conveyor trays on a conveyor at transfer stations and having anti-jamming features comprising:

a pivotably mounted platform defining one of the transfer stations upon which articles carried on the conveyor trays are adapted to be received for removal from the conveyor;

means associated with said platform whereby when a force exceeding a predetermined magnitude is exerted on said platform whenever the article carried thereon becomes jammed between said platform and another conveyor tray for permitting said platform to pivot in response to the force on the jammed article and free-fall to a position for increasing the spacing between said platform and said another conveyor tray for relieving the force on the jammed article; and,

means responsive to pivotal movement of said platform for stopping further travel of the conveyor.

4,497,401

DECORATIVE DISPENSING CONTAINER

Jacqueline B. Ackerman, 2170 Century Park East, Los Angeles, Calif. 90067

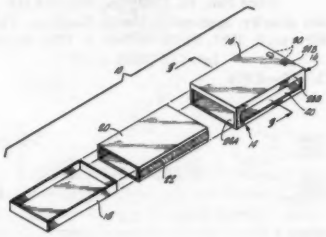
Continuation-in-part of Ser. No. 360,010, Mar. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 333,722, Dec. 23, 1981, abandoned. This application Mar. 18, 1983, Ser. No. 476,827
Int. Cl.³ B65D *5/38*
U.S. Cl. 206—131 **13 Claims**

13. A box-shaped decorative dispensing container comprising:

(a) a sleeve substantially rectangular in cross-section having opposing open ends, opposing side walls, a top wall, and a bottom wall;

(b) a drawer within the sleeve, the drawer being sized to slide in and out of the sleeve through the open ends thereof;

(c) a decorative external case substantially rectangular in cross-section having opposing first and second open ends, opposing side walls, a top wall, and a bottom wall, the case continuously tapering smaller from the first end to the second end forming a cross-sectional area of the case continuously decreasing from the first open end to the second open end, and the second open end of the case being smaller than the first open end, the the sleeve with the drawer therein sliding in and out of the larger first open end of the case and only the drawer and not the sleeve sliding out of the smaller second open end of the



case, the case having a ledge at the intersection of the top wall and one of the side walls; and

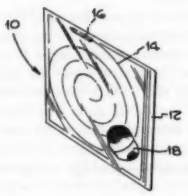
(d) a decorative plaque comprising a metal substrate with a decorative design on one surface thereof with the opposing surface of the plaque being secured to the top wall of the case, the edges of the plaque and the edges of the top wall of the case being substantially coincident, the plaque being tapered with a wide end and a narrow end, the wide end being against the ledge.

4,497,402

PIERCED EAR CLEANING AND STERILIZING APPARATUS

Lisa M. Karos, 12911 Gilmore Ave., Los Angeles, Calif. 90066

Filed Jun. 20, 1983, Ser. No. 506,022
Int. Cl.³ A61M *7/00;* **A61B** *19/00, 17/00;* **B65D** *85/00*
U.S. Cl. 206—210 **12 Claims**



1. In an apparatus for cleaning and sterilizing ear lobe holes for pierced earrings, including a packaging means, an improved disposable apparatus, comprising:

absorbent string means;

firm tip means disposed at one end of said string means; and

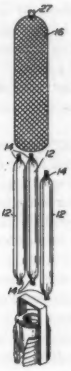
antiseptic fluid means, disposed in said packaging means in contact with said string means, whereby said string means and said tip means are packaged in said packaging means, with said string means being saturated with said fluid, until cleaning and sterilizing of said ear lobe is desired, whereupon said string means and said tip means are removed from said packaging means and run through said ear lobe hole, said string means both cleaning said ear lobe hole and imparting said antiseptic fluid to said hole.

4,497,403

CARTRIDGE CONTAINING MULTIPLE AREAS OF A MULTI-COMPONENT MIX AND METHOD OF MAKING THE SAME

Paul G. Rausch, Lexington, Ky., assignor to Celtite, Inc., Georgetown, Ky.

Filed Jun. 24, 1983, Ser. No. 507,445
Int. Cl.[3] B65D *25/08*
U.S. Cl. 206—219 9 Claims



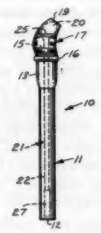
1. A cartridge containing multiple areas of a multi-component mix, said cartridge comprising multiple small, non-rigid envelopes each having a pair of ends and formed of a film and containing at least one component of said multi-component mix, said envelopes being in contact with each other and being longitudinally disposed with the corresponding ends disposed laterally of each other, such that said envelopes are packed closely together, and an outer porous casing enclosing said envelopes.

4,497,404

PROTECTIVE DEVICE FOR A GOLF CLUB

William T. Lowrance, 74 LeCline Cir., Concord, N.C. 28025

Filed Sep. 30, 1983, Ser. No. 537,782
Int. Cl.[3] A63B *57/00*; B65D *85/20*
U.S. Cl. 206—315.2 6 Claims



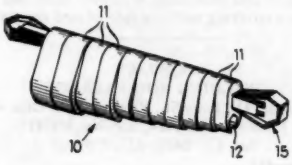
1. A protective device for completely enclosing a golf club, comprising, in combination, a sleeve having an opening at the upper end thereof for receiving a shaft and grip of said club, a cover open at both ends for receiving a head of the club, and means for attaching one end of said cover adjacent the opening of said sleeve, said sleeve including a pair of spaced-apart annular rings with one of said rings being located adjacent the peripheral edge of said sleeve opening and both rings defining a channel for receiving one end of said cover and said attaching means, said cover being made of an expandable material enabling it to be inverted over said sleeve with said one end being held by said attaching means and the other end being located below the other one of said rings.

4,497,405

WRENCH HOLDER

Frank Mikic; John E. Fuhreck, and Larry D. Pacetti, all of Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jul. 2, 1984, Ser. No. 627,057
Int. Cl.[3] B65D *85/62*
U.S. Cl. 206—378 16 Claims



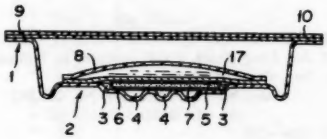
1. A wrench holder for a set of wrenches each having an opening for receiving the shank end of a drive tool, comprising a pair of elongated members, each of said members including an elongated body and a pair of substantially parallel legs extending therefrom, the cross-sectional size of said body and said legs being less than the size of the wrench opening so that said body and said legs can be passed through and pulled out of such openings, the legs and the body of one of said elongated members slidably interfitting with the legs and the body of the other of said elongated members, each of said elongated members further including a head on the end of the body thereof remote from the associated legs, the cross-sectional size of each head being greater than the size of each wrench opening so that the wrenches are retained on the wrench holder when said legs are interfitted.

4,497,406

PACKAGE FOR STORAGE OF MEDICAL CONTAINER

Nobuyasu Takanashi, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,215
Claims priority, application Japan, May 6, 1982, 57-74503
Int. Cl.[3] B65D *81/20*
U.S. Cl. 206—438 14 Claims



1. A package for storing a medical container which contains a medical fluid, the package comprising:

a tightly sealed substantially gas-impervious vessel having a recess formed on the bottom of said vessel, said recess opening to the inside of said vessel; said vessel having a gas barrier property sufficient to limit the oxygen concentration in the package to no more than 0.1% by volume when said tray has been heat sealed for 72 hours;

a deoxidizer in said recess;

a gas-pervious sheet covering one side of said deoxidizer and being between said deoxidizer and said bottom of said vessel;

a gas-impervious sheet on at least one other side of said deoxidizer and facing upward and away from the bottom

of said vessel; said medical container being in said vessel and above and in contact with said gas-impervious sheet;

at least one passage provided on the bottom inner side of said vessel and adjoining said gas-pervious sheet side of said deoxidizer for communicating said gas-pervious sheet side of said deoxidizer with the atmosphere enclosed within said tightly sealed vessel of the package whereby said medical container is in gas communication with said deoxidizer; and

wherein said at least one passage comprises grooves formed in a surface of said bottom of said vessel, and said grooves extending from under the gas-pervious sheet covering said one side of said deoxidizer to remote from said gas-pervious sheet covering said one side of said deoxidizer.

4,497,407

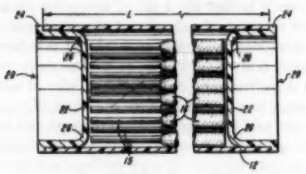
WELDING ROD PACKAGE

Daniel J. Stager, 110 Long St., Pleasant Hill, Ohio 45359

Filed Apr. 16, 1984, Ser. No. 600,417

Int. Cl.³ B65D *85/26, 59/02*

U.S. Cl. 206—443 **19 Claims**



1. A welding rod package for use in shipping and storing welding rods in a protected environment, comprising a bundle of welding rods having a predetermined length, an elongated tube of extruded air-impervious plastics material, said tube having opposite end portions and surrounding said bundle of rods, said tube extending the length of said rods and having substantial rigidity for protecting said rods against an impact, a set of end closure members of molded air-impervious plastics material and engaging said opposite end portions of said tube in press-fit relation, each of said end closure members conforming to the corresponding said end portion of said tube and forming an air-resistant friction seal with said end portion, and at least one of said closure members being removable from the corresponding said end portion of said tube and resealable therewith to form an economical and reusable air-resistant enclosure for the welding rods.

4,497,408

STACKABLE CONTAINER WITH LOCKING LID

Otto J. Jes, Long Beach, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed Nov. 29, 1982, Ser. No. 445,362

Int. Cl.³ B65D *5/34, 55/00*

U.S. Cl. 206—509 **3 Claims**

1. A stackable container for packaging and transporting fresh fruits, vegetables and the like, comprising

(a) a body member having a generally rectangular vertical cross section and open at its opposite ends, said body member being formed from a unitary, generally rectangular blank of corrugated paperboard including

(1) a generally rectangular bottom wall (**10**) having opposed side and end edges, said bottom wall end edges each containing an opening (**22***a*), respectively;

(2) a pair of side walls (**12**) connected with said bottom wall side edges by a pair of first parallel fold lines (**36**), respectively, said side walls being folded about said first fold lines, respectively, to spaced parallel positions normal to said bottom wall; and

(3) a pair of lid flaps (**30**) connected with the edges of said side walls opposite said bottom wall by a pair of second parallel fold lines (**40**), respectively, said lid flaps being adapted for folding about said second fold lines, respectively, to coplanar positions normal to said side walls spaced from and parallel to said bottom wall, thereby to define the top wall of the body member, said lid flaps each containing a cut-out portion (**32**) in each end edge thereof, said cut-out portions each defining a locking tongue extension (**34**);

(b) a pair of end walls (**14**) for closing the ends of said body member, each of said end walls being formed from a unitary, generally rectangular blank of corrugated paperboard, respectively, each of said blanks including

(1) a generally rectangular intermediate section (**56**) having opposed side and end edges;

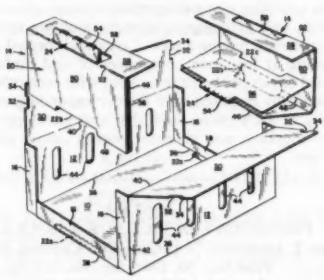
(2) a generally rectangular inner section (**46**) connected with one end edge of said intermediate section by first fold line means (**54**);

(3) a generally rectangular outer section (**50**) connected with the free end edge of said inner section by second fold line means (**48**) parallel to said first fold line means;

(4) a generally rectangular ledge section (**28**) connected with the free end edge of said outer section by third fold line means (**52**) parallel to said second fold line means;

(5) said intermediate and inner sections containing a pair of recesses (**60**) in their side edges, respectively, along said first fold line means to define a cleat bridging said intermediate and inner sections;

(6) said inner section containing a pair of spaced apertures (**26**) adjacent said first fold line means;



(7) at least one of said inner and outer sections containing a first aperture (**22***b*) intermediate the side edges thereof along said second fold line means; and

(8) said ledge section containing a second aperture (**58**) intermediate the side edges thereof along said third fold line means, said intermediate section being folded about said first fold line means to a position in contiguous engagement with said inner section, said inner section being folded about said second fold line means to a position parallel with said outer section, said intermediate section being sandwiched between said inner and outer sections to define a three-layer end wall with said cleat extending beyond the upper edge thereof; and

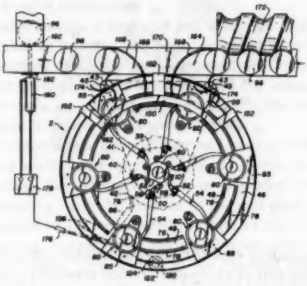
(c) means connecting said end walls with said body member with said inner sections arranged facing one another and with said end wall first apertures being aligned with said body member bottom wall openings, respectively, said ledge sections being folded about said third fold line means over said cleats to positions parallel to and opposite said body member bottom wall and said body member lid flaps being folded about said second fold lines to positions adjacent said ledge sections with said lid locking tongue extensions engaging said end wall inner section apertures, respectively, to close and lock the container, whereby when the containers are stacked, said cleats of a lower container are received by said aligned end wall first apertures and said body member bottom wall openings of the upper container.

4,497,409

SEAM INSPECTION APPARATUS

Wun C. Chong, 69 Wallace Place, Delta, British Columbia, Canada

Filed Dec. 27, 1982, Ser. No. 453,203
Int. Cl.³ B07C 5/02
U.S. Cl. 209—538 **20 Claims**



12. Apparatus to permit inspection of an object, the apparatus comprising a central fixed shaft;

table rotatably attached to the shaft;

a circumferential opening in the table to define a track with which the object can move;

means to rotate the table;

means to carry the object along with the track comprising a carriage movable in the track, the carriage comprising a chassis adapted to move along the track by an arm abutting the carriage and pivotally attached to the table;

clamping means to hold the object as it moves;

means defining an inspection zone on the track;

means to stop the object moving along with the track at the inspection zone;

means to rotate the object in the inspection zone so it may be inspected;

a flange attached to the central shaft;

a flattened portion in the flange radially aligned with the inspection zone;

the arm including a dog-leg extending to contact the flange whereby the arm cannot rotate out of contact with the carriage under the influence of the weight of the object but the flat portion allows the arm to pivot to cease moving the carriage along the track in the inspection zone.

4,497,410

AUTOMATIC TOOL CHANGER FOR A LATHE

William C. Coate, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Division of Ser. No. 376,813, May 10, 1982, Pat. No. 4,457,065, which is a continuation of Ser. No. 93,726, Nov. 13, 1979, Pat. No. 4,330,928. This application Aug. 15, 1983, Ser. No. 523,257
Claims priority, application European Pat. Off., Nov. 13, 1980, 80304085.6
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.
Int. Cl.³ B23Q 3/155
U.S. Cl. 211—1.5 **5 Claims**

3. A tool magazine for a machine tool, comprising

a circular support frame including a drive shaft adapted for mounting on the machine tool and defining an axis of rotation for said support frame concentric with its center;

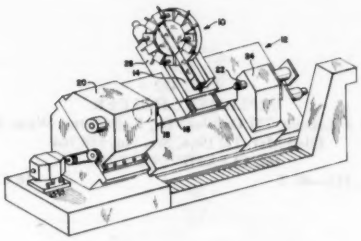
a plurality of carrier blocks each having at least one tool holder thereon,

an equal plurality of channel shaped recesses in said support frome each including guide rails receiving one of said carrier blocks and providing for movement of the blocks out of said recesses along lines parallel to and offset from radial extending through said drive shaft,

a stationary guide channel section extending outwardly of said support frome and having rails arranged to be aligned with the guide rails in said recesses,

a stationary circular channel located within said support frome and having an opening aligned with said guide channel section,

each of said carrier blocks having roller means engaged with



said circular channel except when the block is aligned with said stationary guide channel rails,

a shuttle member movable along said stationary guide channel section and including an arcuate channel segment corresponding to the opening in said circular channel,

means for rotating said drive shaft to present a selected carrier block at said stationary guide channel section,

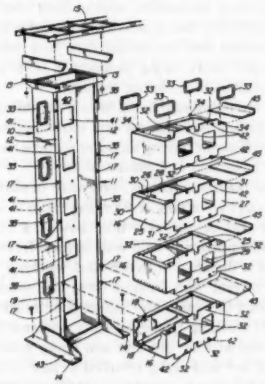
means for moving the selected carrier block outwardly along the rails of said stationary guide channel section to a tool post position.

4,497,411

DISTRIBUTING FRAME FOR TELECOMMUNICATIONS SYSTEMS

George DeBortoli, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 19, 1982, Ser. No. 369,342
Int. Cl.³ A47F 5/00
U.S. Cl. 211—26 **12 Claims**



1. A distributing frame comprising:

an upright hollow member having a front and a back;

a plurality of hollow shelf members mounted on said front, one above the other, with access from said hollow member through said front to said shelf members;

each of said shelf members including an aperture in a back wall and at least one aperture in a front wall;

means for attaching modules on said front wall of each of said shelf members, with access to the modules from said shelf members through said apertures in said front walls;

means for attaching modules on said back, one above the other, with access from said hollow member through said back to the modules attached to said back.

4,497,412

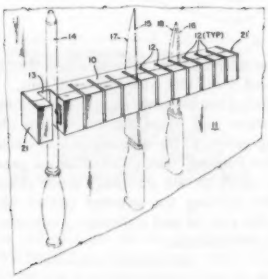
IMPLEMENT HOLDER

Edward J. Labelle, 777 Overlake Dr. E, Bellevue, Wash. 98004

Filed Mar. 12, 1984, Ser. No. 588,764

Int. Cl.³ A47F *5/08, 7/00*

U.S. Cl. 211—60 T **16 Claims**



1. A holder for knives and the like to be mounted on a mounting surface and comprising:

a body having a first end, a second end, a long dimension extending from said first end to said second end, a mounting face, a cavity having a cross section and extending from said first end to said second end and at least one slot oriented essentially perpendicular to said mounting face and said long dimension, said at least one slot having a width and a first face and extending part way through said body toward said mounting face and intersecting said cavity, said body being mountable with said mounting face against said mounting surface;

means for attaching said body to said mounting surface with said mounting face against said mounting surface;

at least one fastener having an outer surface having a portion farthest from said at least one slot;

at least one magnetic means sized to fit in said cross section of said cavity, having a working face, a center, a hole through said center, said hole having a diameter and a wall with a portion of said wall farthest from said working face and a distance between said working face and said portion of said wall farthest from said working face and said at least one magnetic means positioned in said cavity with said working face essentially coplanar with said first face of said at least one slot and being retained in said at least one slot and being retained in said cavity by said at least one fastener inserted into said body perpendicular to said mounting face extending through said hole and said cavity; whereby, with said body attached against said mounting surface by said means for attaching with said mounting face against said mounting surface, a knife or the like of ferromagnetic material inserted into said at least one slot is engaged by said at least one magnetic means and thereby held.

4,497,413

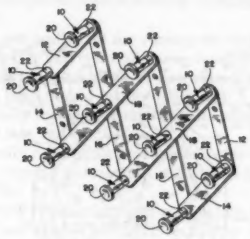
RACK

Richard M. Tocci, 121 Scenic Dr., Leominster, Mass. 01453

Filed Feb. 1, 1984, Ser. No. 575,877

Int. Cl.³ A47F *5/08*

U.S. Cl. 211—202 **9 Claims**



1. An expanding rack for hanging articles comprising:

at least one pair of elongated crossed members consisting of an upper and a lower member, each member having an upper and lower surface,

a large barrel, open end to end, on the upper member, said large barrel having an axis at a right angle to the upper member and further having an upper portion extending from the upper surface of said upper member and a lower portion extending through said upper member,

a small barrel, open end to end, on the lower member, said small barrel having an axis at a right angle to the lower member, said small barrel being shorter than the large barrel and having an upper portion extending from the upper surface of said lower member into the lower portion of said large barrel and further having a lower portion extending through said lower member,

a pin having a main first part equal in diameter to the outer diameter of the upper portion of the large barrel, said main first part having a shorter axially extending second part of less diameter so as to enter the large barrel, a third part extending axially from the second part, and a button on the distal end of the third part, said button having a diameter greater than the interior diameter of the small barrel so as to enter the latter with the button snapping through and under the small barrel to attach the two members together in interpivoted relationship,

the main first part of the pin having an outside dimension and shape the same as the outside dimension and shape of the upper portion of the large barrel, the main first part of the pin and the upper portion of the large barrel abutting endwise and appearing together as a continuous pin.

4,497,414

MECHANICAL CENTRAL BUFFER COUPLING

Hilmar Forster, Wolfenbüttel, and Heinz-Georg Wonka, Braunschweig, both of Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,973

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144730

Int. Cl.³ B61G *5/08*

U.S. Cl. 213—76 **10 Claims**

1. An air valve, for a Scharfenberg type mechanical central buffer coupling arrangement for a rail vehicle having a coupling which is used to form a connection with a cooperating coupling of an adjacent rail vehicle upon movement of the couplings from an uncoupled to a coupled position, and in which arrangement a rail brake influencing main air conduit is provided for connection to a coupling lock in a brake actuator coupling lock for operating the brake of the rail vehicle, such coupling lock having a controlled pneumatic valve for opening the coupling lock, such that said air valve is adapted to be

mounted on an end plate of the corresponding coupling and connected with the main air conduit and the pneumatic valve to control the brake actuator coupling lock whereby in the case of an unintentional severing of the connection of the central buffer coupling with that of the adjacent rail vehicle said air valve will actuate the brake of the rail vehicle by venting the main air conduit so as to cause the brake to operate automatically,

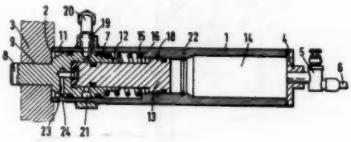
said air valve comprising

a cylinder having a first end and a second end and a wall defining an interior, and being arranged at its first end on a coupling end plate having an end plate opening,

an inlet in the cylinder wall adapted for connection with such main air conduit and an outlet in the cylinder wall remote from the inlet for venting air,

a guide movable in the cylinder and having a first end provided with a ram portion extending into the end plate opening and movable from an extended ram position protruding from the exterior of the end plate, which corresponds to the uncoupled position of the central buffer coupling, to a retracted ram position not protruding therefrom, which corresponds to the coupled position of the central buffer coupling, and having a second end provided with a reception recess,

a piston movable in the cylinder and movable relative to the guide and having a stem portion extending into and displaceable in the reception recess and a head portion forming an air chamber with the cylinder interior, the piston being movable relative to the air chamber from an extended position in which its stem portion is closer to the cylinder first end to a retracted position in which its stem portion is farther from the cylinder first end, and



means in the guide defining a closeable vent flow path for flow communicating the cylinder wall inlet with the cylinder wall outlet through the reception recess and arranged such that in the coupled position of the central buffer coupling in which the ram portion is in retracted position, the guide extends into blocking relation with the cylinder inlet so as to keep the vent flow path closed, and in the uncoupled position of the central buffer coupling in which the ram portion is in extended position the guide is positioned out of blocking relation with the cylinder inlet while the piston is in its extended position and extends into the reception recess and into blocking relation with the vent flow path so as to keep the vent flow path closed, and

such that upon unintentional severing of the connection of the central buffer coupling, the ram portion moves to its extended position and the guide moves out of blocking relation with the cylinder inlet while the piston remains in its retracted position and is out of blocking relation with the vent flow path so as to open the vent flow path for venting air entering the cylinder inlet from the main air conduit through the vent flow path and the cylinder outlet to the exterior of the air valve.

4,497,415

NON-REFILLABLE AND INVIOLABLE BOTTLE-CAP

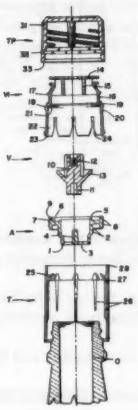
Adriano G. Arona Delonghi, Monterrey, Mexico, assignor to Fabrication De Maquinas, S.A., Monterrey, Mexico

Filed Feb. 3, 1984, Ser. No. 576,868

Claims priority, application Mexico, Feb. 4, 1983, 196169

Int. Cl.³ B65D *49/02*

U.S. Cl. 215—21 **10 Claims**



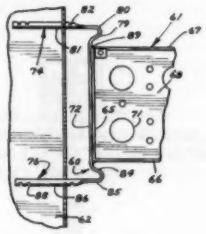
1. Improved, non-refillable and inviolable cap for bottles and similar containers, featured by and including a combination of: a valve-seat for coupling hermetically to the mouth of the container, and which encompasses a relatively flexible valve-seat flange, a hollow-bottom to allow the flow of the receptacle's contents, a guiding, central and vertical projection, and an annular retention-member including an interlocking-surface on one end; a valve having a central cavity on each of its ends, one of which is loosely coupled into the vertical projection of the seat, and a conical sealing-wall which surrounds it and which rests on the valve-seat flange; an externally-threaded spout, embracing a flange in the middle thereof, an internal, interlocking-surface, a plurality of protuberances (legs), all of them having an external interlocking-flange on their lower ends, and an internal, central ring pending from the upper wall, in order to guide and withhold the valve when open, a fastening-tube encompassing a plurality of relatively flexible internal fastening-protuberances, passing through the spout's protuberances (legs), so as to interlock against the brim of the container's neck to prevent if from sliding upwards, a plurality of interlocking-surfaces, one of which interlocks with the flange of the spout's protuberances (legs), to hamper it from sliding downwards, and a plurality of internal, vertical fastening ribs, which cooperate with the flange of the container's neck, hindering it from revolving around the container; and a cap threaded internally towards the spout, including a central pivot pending from its upper wall, and penetrating through the upper cavity of the valve, in order to push and retain the valve, sealing it against the seat-flange, a portion of annular lapping entirely united to the cap by a plurality of breakable reticula, lapping which includes a plurality of interlocking-surfaces that permit it to interlock directly or indirectly with the spout and/or the tube.

4,497,416

ELECTRICAL RECEPTACLE BOX ASSEMBLY

Robert A. Smolik, 670 W. Seventh St., St. Paul, Minn. 55102

Continuation-in-part of Ser. No. 399,473, Jul. 19, 1982, Pat. No. 4,403,708. This application Jun. 23, 1983, Ser. No. 507,098
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ H02G 3/10
U.S. Cl. 220—3.5 24 Claims



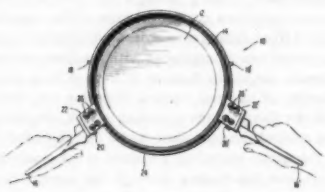
1. An electrical receptacle box assembly comprising:
housing means for accommodation of an electrical receptacle;
a wall stud of the type for use in building construction with a side having a plurality of mounting holes describing a hole pattern;
a mounting bracket for mounting said housing means to said wall stud;
said mounting bracket including a base having first and second opposite longitudinal ends;
means securing the housing means to the base between the longitudinal ends;
a plurality of resilient tines outwardly extended from the first and second longitudinal ends of the base opposite the housing means, each having a linear tine portion outwardly extended from the base, said linear tine portions being substantially parallel to each other, each tine at an opposite end having a flexure arm fixed to a longitudinal end of the base permitting a resilient deflection of the linear tine portion with respect to the base, said linear tine portions having outer tips arranged to describe a pattern generally corresponding to, but slightly deviant from, the hole pattern on the wall stud whereby the tines are insertable into the holes under slight spring deflection to mount the housing means to the wall stud.

4,497,417

ROTATABLE SPLIT HANDLED COOKING UTENSIL

Michael A. Tabet, 1302 Pamela Pl., Norfolk, Va. 23513

Filed Mar. 23, 1983, Ser. No. 477,947
Int. Cl.³ B65D 25/28
U.S. Cl. 220—94 R 5 Claims



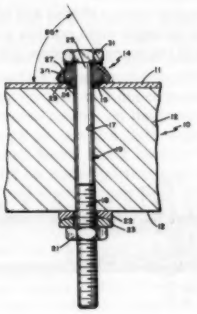
1. A cooking utensil of the type having a cooking surface with a side wall extending upwardly therefrom, the improvements comprising:
(a) a pair of split handles,
(b) means on one end of each handle for permanently and slidably attaching the same to the wall of the cooking utensil, and means on the side wall, operatively associated with said means on one end of each handle, which allow the split handle portions slidably attached to the side wall to slide to a position adjacent one another with a function as a single handle, and to positions opposite each other around the periphery of the cooking surface so as to allow a user to lift and manipulate the cooking utensil by grasping both split handles; and
(c) securing means which hold the split handles together for use as a single handle unless separated by a user for use as split handles.

4,497,418

REPAIR PLUG ASSEMBLY FOR VESSEL HAVING A CORROSION RESISTANT LINING

Erwin J. Nunlist, Penfield, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

Filed Feb. 15, 1984, Ser. No. 580,319
Int. Cl.³ B65D 53/00
U.S. Cl. 220—234 14 Claims



1. A repair plug assembly for repairing a breach in a glass coated lining of a corrosion resistant vessel wall, said assembly comprising
(a) a stud secured to said vessel wall and having a partially threaded portion inserted in the breach and a second portion exposed at said lining surface,
(b) a flexible and compactible packing material disposed over said breach and about the surface of said exposed portion of said stud,
(c) containing means about the periphery of said packing material,
(d) a concave dome-shaped cap mounted over said packing material and having a central aperture therein through which extends the free end of said exposed portion of said stud, and
(e) means on said stud applying pressure to said cap against said packing material to simultaneously squeeze the material into sealing position against both the exposed portion of said stud and the glass coated surface of said vessel on and about said breach.

4,497,419

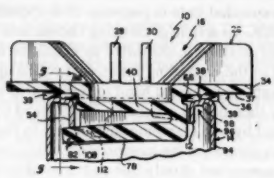
ONE-PIECE CAP

Henry M. Reitzel, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Feb. 2, 1984, Ser. No. 576,315
Int. Cl.³ B65D 41/06, 41/36
U.S. Cl. 220—302 14 Claims

1. A cap for closing an aperture having a camming surface, the cap comprising

a first body portion having a diameter larger than the aperture, and



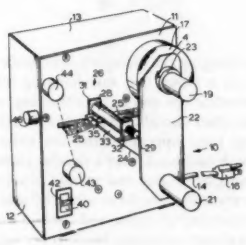
a second body portion for insertion into the aperture, the second body portion including first and second generally parallel, non-colinear arms for engaging the camming surface of the aperture.

4,497,420

LABEL DISPENSER

William N. Stelcher, Deerfield, Ill., and Michael J. Murdock, Bristol, Wis., assignors to Kinetronics Corporation, Lake Bluff, Ill.

Filed May 14, 1982, Ser. No. 378,128
Int. Cl.³ B65C 9/42
U.S. Cl. 221—13 **1 Claim**



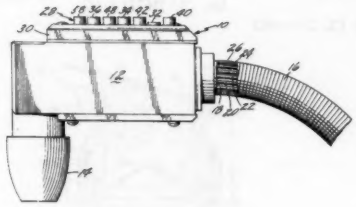
1. An automatic label dispenser comprising, a case with at least one planar wall, a take-up shaft mounted on said one planar wall, drive means connected to said take-up shaft, a pay-out shaft mounted on said one planar wall for supporting and supplying backing ribbon with labels mounted thereon, a peel bar mounted on and extending out from said one planar wall and said backing ribbon and labels passing thereby with the backing ribbon passing to said take-up shaft and said labels separated from said ribbon at said peel bar and extending therefrom, infrared transmitting and receiving means mounted on said one planar wall and said receiving means connected to said drive means and positioned such that a label will pass between said transmitting and receiving means to intercept the energy transmitted from said transmitting means to turn off said drive means, including a planar member with openings receivable over said take-up shaft and said pay-out shaft and means for locking said planar member at selected distances from said one planar wall, wherein said means for locking comprises a collar receivable over said pay-out shaft and set screw means to lock said collar to said pay-out shaft, including means for moving said peel bar relative to said one planar wall to adjust for labels of varying lengths, and wherein said peel bar includes a bracket for rotatably supporting a guide shaft and said backing ribbon and said labels passing between said guide shaft and said bracket, wherein said one planar wall is formed with a slot in which said bracket is mounted and means for moving said bracket, and wherein said means for moving said bracket includes a threaded lead screw rotatably supported by said case and threadedly engaged with said bracket such that when said lead screw is rotated said bracket moves in said slot to move said peel bar, wherein said guide shaft has a flexible outer layer and said bracket having an edge for changing the direction of said ribbon to separate said labels from said ribbon, including means for modulating the energy radiated by said infrared transmitting means and means in said receiving means for detecting the modulated energy to discriminate between said radiated energy and ambient radiation, and including switch means connected to said receiving means to energize said drive means.

4,497,421

MECHANICAL POST MIX BEVERAGE DISPENSING SYSTEM

William Schilling, Farmington, Conn., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jun. 18, 1982, Ser. No. 389,692
Int. Cl.³ B67D 5/60
U.S. Cl. 222—144.5 **8 Claims**



1. A beverage dispensing unit comprising:

housing means for housing a plurality of valve elements, said housing means having a plurality of fluid inlets to receive a first fluid and a plurality of second fluids and a plurality of fluid outlets for delivery of fluids to a mixing head;

a first group of valve chambers in said housing means, a first of said first group of valve chambers being connected to receive a supply of a first fluid, and a plurality of second of said first group of valve chambers being arranged in an array with respect to said first valve chamber and being connected to receive supplies of second fluids;

first valve means in said first valve chamber of said first group;

second valve means in each of said second valve chambers of said first group;

first valve operating means associated with said first valve means of said first group to operate said first valve;

second valve operating means associated with each of said second valve means of said first group to operate each of said second valves;

bridging means from each of said second valve operating means of said first group to said first valve operating means of said first group to automatically operate said first valve means of said first group for delivery of said first fluid with a second fluid whenever a second valve operating means of said first group is operated for delivery of any selected second fluid;

a second group of valve chambers in said housing means, a first of said second group of valve chambers being connected to receive a supply of a first fluid, and a plurality of second of said second group of valve chambers being arranged in an array with respect to said first valve chamber and being connected to receive supplies of second fluids;

first valve means in said first valve chamber of said second group;

second valve means in each of said second valve chambers of said second group;

first valve operating means associated with said first valve means of said second group to operate said first valve;

second valve operating means associated with each of said

second valve means of said second group to operate each of said second valves;

bridging means from each of said second valve operating means of said second group to said first valve operating means of said second group to automatically operate said first valve means of said second group for delivery of said first fluid with a second fluid whenever a second valve operating means of said second group is operated for delivery of any selected second fluid; and

means for switching at least one of said second valve operating means and its bridging means of said first group to said second group for automatic operation of said first valve means of said second group whenever said one second valve operating means is thereafter operated.

4,497,422

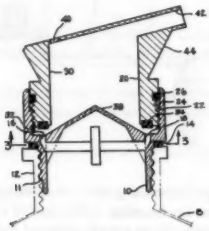
POURING CAP

Garry W. Klees, 9130 SE. 72nd Pl., King County, Wash. 98040

Filed Jun. 23, 1983, Ser. No. 507,091

Int. Cl.³ B67D *3/00*

U.S. Cl. 222—482 **9 Claims**



1. A combination pourer and stopper for thin, primarily volatile liquids, comprising:

a threaded adapter member, adapted to be sealingly coupled to the neck of a liquid bottle, said adapter member having radially, widely spaced pouring and vent holes through which the liquid can leave the bottle and air can enter the bottle, respectively,

a pouring member threaded into said adapter member, said pouring member having a pouring spout and a vent port, the vent port being widely spaced from the pouring spout and the pouring spout generally overlying the pouring hole of the adapter member, the pouring member having an externally threaded flange and having a cavity defined by a generally vertical internal wall for reducing surface adhesion of liquid within the pouring member, sealing means for selectively sealing threads of the flange from the pouring spout for precluding movement of liquid from the threaded flange to the pouring spout but allowing access by the liquid to the threads for lubrication when unsealed, and sealing means responsive to axially inward movement of the pouring member for selectively sealing the pouring and vent holes for precluding, when sealed, movement of liquid out of said bottle.

4,497,423

CLOTHES HANGER HAVING SHROUD TO MAINTAIN GARMENTS IN ROLLED CONDITION

Pamela R. Cummins, 602/2 Broughton Rd., Artarmon, NSW 2064, Australia

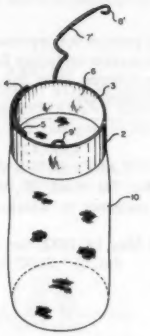
Filed May 3, 1982, Ser. No. 374,163

Claims priority, application Australia, Nov. 13, 1981, PF1550

Int. Cl.³ A47J *51/086, 51/14*

U.S. Cl. 223—96 **1 Claim**

1. A clothes hanger for hanging and for reducing creasing of a garment during packing and movement of the same comprising a resiliently expandable, circular clamping band of spring material, said clamping band having an internal clamping surface and end portions, said clamping band being movable from a normally compressed state in which said end portions overlap to an expanded state in response to an expanding force to receive a rolled-up article of clothing therein and for retaining the article of clothing in the rolled up condition in response to the removal of the expanding force, said rolled up article of clothing receivable within said band in response to an increase in the diameter thereof and retainable in said band by a clamping force exerted by said clamping surface due to the tendency of said band to return to the compressed state; and hanging means fixedly connected at only one end thereof to the clamping band for hanging the clamping band with a retained article of clothing on a closet bar, said hanging means comprises a strap connected at one end to the clamping band, a hook connected to the other end of the strap and an eyelet connected on the clamping band opposite from the strap connection and engagable with said hook; and a tubular shroud of stretchable material connected at one end to said clamping band and extending downwardly therefrom whereby said shroud provides an enclosed member to encase and contain the article of clothing received in said clamping band to prevent creasing of the garment.



4,497,424

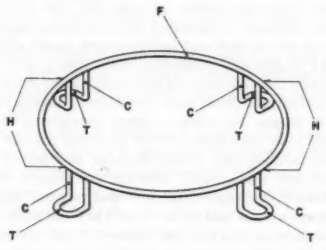
ELASTIC HOSIERY APPLICATOR

Samuel W. Smith, 1104 Burbank Rd., Anthony, Fla. 32617

Filed Jun. 11, 1981, Ser. No. 272,686

Int. Cl.³ A47J *51/06*

U.S. Cl. 223—111 **5 Claims**



1. A device for facilitating the application of elastic hosiery upon the lower leg of a person without taxing hand strength, including:

a rigid perimeter frame means sized to encircle the said lower leg of a person and preferably planar and circular in shape, said frame means affording a plurality of graspable portions at various stages of planar rotation, means whereby said elastic hosiery, collected upon said device

without specific orientation thereto, may be oriented to the said lower leg of a person upon the planar rotation of said device, and

a plurality of descending collector leg means extending from said frame means substantially normal to the plane thereof and in spaced array, upon which said collector leg means said elastic hosiery may be collected in incremental pleatings without taxation of hand strength, and

retainer tip means upon a lower portion of said collector leg means and comprising an obstructive protuberance hindering the premature deployment of said elastic hosiery from collection upon said collector leg means, with

said device having a non-destructive exterior finish sufficiently smooth and blunt in character as to preclude snagging, running, or otherwise damaging the said elastic hosiery during the use of the said device.

4,497,425

CARRIER ARRANGEMENT

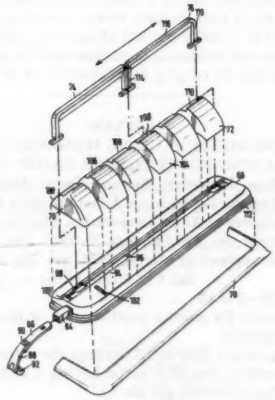
Ulrich Möbius, Fraunhoferstrasse 45, D-6450 Hanau (Main), Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,892

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 8113476[U]

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—324 **27 Claims**



1. A vehicle roof carrier for accommodating goods to be carried on the roof of a motor vehicle, said carrier comprising:

at least one elongated carrier member having upper and lower surfaces and opposing ends and adapted to being mounted transversely on the vehicle roof to support the goods carried thereon, said carrier member including means defining a slit longitudinally extending between said opposing ends and having at least one enlarged area in communication with said slit;

mounting means associated with said at least one carrier member for mounting said at least one carrier member transversely on the vehicle roof;

plural mounting members each retained on said upper surface of said at least one carrier member at predetermined positions, each said mounting member defining a convexly curved forward surface to minimize resistance thereof to air flow and means defining recessed surfaces rearward of said forward surface; and

at least one retaining clip means for retaining said mounting members in said predetermined positions, said at least one retaining clip means being generally U-shaped having a pair of vertical legs separated by a horizontal leg, each said vertical leg including engagement members registrable with said enlarged area, wherein one of said engagement members is registered with said enlarged area and longitudinally moved in said slit prior to said plural mounting members being placed in said predetermined positions and thereafter the other of said engagement members is registered with said enlarged area and longitudinally moved in said slit so that said horizontal leg seats in each said recess surface of said mounting members to retain said mounting members in said predetermined positions.

4,497,426

MECHANISM OF CONTROLLING PARALLELISM BETWEEN THE PINCH ROLLER AND CAPSTAN SHAFT

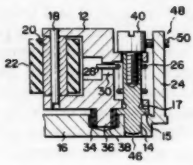
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 303,922, Sep. 21, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,374

Claims priority, application Japan, Sep. 25, 1980, 55-133164

Int. Cl.³ B65H *5/06, 23/16*

U.S. Cl. 226—187 **13 Claims**



1. In a tape recorder comprising a pinch roller adapted to engage with a capstan shaft; a support arm shaft mounted on a base board; and a pinch roller support arm coupled to said support arm shaft,

the improvement comprising means for controlling parallelism between said pinch roller and said capstan shaft, said parallelism controlling means including:

a wall extending upwardly relative to said base board, close to said support arm shaft;

said support arm shaft having one end fixedly and nonadjustably connected to said base board;

said support arm shaft extending upwardly from said base board such that it has a tendency to be inclined toward said wall to produce a reaction force against reducing the inclination thereof, said support arm shaft having a free end portion remote from said one fixed end, and rotatably holding said support arm; and

a pinch roller parallelism-adjusting means coupled to said wall, and which is located within the limits of the thickness of said pinch roller support arm, said parallelism-adjusting means including adjustable pressing means which presses against said free end portion of said support arm shaft to push said support arm shaft in a direction away from said wall, against said inclining tendency and said reaction force of said support arm shaft.

4,497,427

TIP ASSEMBLY HAVING REPLACEABLE TIP

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Filed Feb. 22, 1982, Ser. No. 350,698

Int. Cl.³ B23K *3/00*

U.S. Cl. 228—20 **15 Claims**

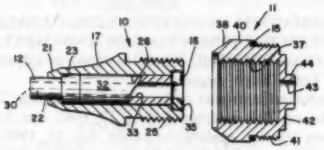
1. A tip assembly for a desoldering instrument, the assembly having a replacable tip, said assembly comprising:

(a) a tip housing portion and having an outward forward portion with a decreasing diameter forming in cross-section a concave curve, the extreme outward front portion forming a short cone, and a central cylindrical bore extending along the central axis of said housing portion, the front portion of said cylindrical bore being of smaller

diameter than that of the remainder of said cylindrical bore;

(b) an end cap portion threaded to the rear portion of the tip housing portion and having a central wide bore, the rear end of said bore being of smaller diameter and forming a disk extending beyond the rear surface of said end cap portion; and

(c) a desoldering tip retained by and forwardly of said disk



having an internal bore and extending through said bore of said tip housing and formed of a heat-resistant plastic material, said short cone of said housing forming a heat sink for said tip wherein said housing portion and said end cap portion are separate pieces removably secured together by screw threads provided on each one of said portions and a spacer bushing of substantially pure Teflon extending through said bore of said tip housing portion to the rear end thereof and in contact with said tip.

4,497,428

METHOD OF BRAZE-JOINTING METALLIC PROFILE COMPONENTS

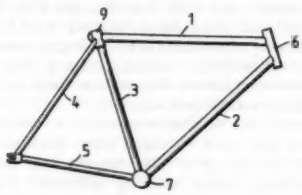
Wolfgang Baumann, Langenfeld, Fed. Rep. of Germany, assignor to FA. ELGA Elektro-und Apparatebau GmbH, Ingbert, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,121

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035187

Int. Cl.³ B23K *33/00, 31/08*

U.S. Cl. 228—175 **3 Claims**



1. A method for joining a plurality of tubes with at least one joint to form a frame, wherein said method comprises:

providing an end portion of a first tube of said plurality of tubes with a profile substantially matching the shape of said at least one joint along an outer contour of a second tube of said plurality of tubes;

providing the end face of said profile of said end portion of said first tube with a plurality of projections for projection welding;

forming a brazing gap of substantially uniform width between said first and second tubes by contacting said first tube with said second tube exclusively at said plurality of projections so as to form said brazing gap laterally between adjacent projections along the end face of said profile;

projection welding said first and second tubes at each of said plurality of projections to stabilize said frame for a brazing operation; and

brazing said first tube to said second tube to form said joint by brazing along said brazing gap.

4,497,429

PROCESS FOR JOINING TOGETHER TWO OR MORE METAL PARTS USING A HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 420,549, Sep. 20, 1982, Pat. No. 4,460,658. This application Mar. 7, 1984, Ser. No. 587,323

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.³ B23K *35/30*

U.S. Cl. 228—263.18 **5 Claims**

1. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of 10 to 52 atom percent nickel, 2 to 10 atom percent tin and 10 to 15 atom percent phosphorus, the balance being copper and incidental impurities and the total of copper, nickel and tin ranging from about 85 to 90 atom percent.

4,497,430

BRAZING METHOD USING HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, N.J.

Division of Ser. No. 420,550, Sep. 20, 1982, Pat. No. 4,448,851. This application Mar. 8, 1984, Ser. No. 587,718

Int. Cl.³ B23K *1/04*

U.S. Cl. 228—263.18 **5 Claims**

1. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of about 2.5 to 11 atom percent tin, about 11 to 15 atom percent boron, the balance being copper and incidental impurities and the total of copper and tin ranging from about 85 to 89 atom percent.

4,497,431

CONTAINER STRUCTURE

James E. Fay, Neenah, Wis., assignor to James River—Norwalk, Inc., Norwalk, Conn.

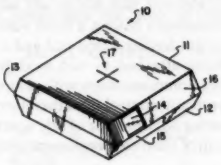
Filed Jan. 4, 1982, Ser. No. 336,675

Int. Cl.³ B65D *5/42*

U.S. Cl. 229—6 R **22 Claims**

1. A container for hot moist foods from which moisture emanates, said container including at least one wall area of paperboard formed from a sheet of from about 10 point to about 14 point paperboard, one surface of said sheet facing the inside of said container and forming the inner surface thereof, said inner surface being capable of absorbing moisture emanating from hot moist foods when the foods are contained inside the container, the improvement comprising at least two tab

sections formed by an array of knife cuts in the wall area, said knife cuts comprising straight continuous cuts, at least two of said cuts intersecting one another at an angle of 90 degrees or less to form two cut edges of each said tab section, each said tab section having said cut edges free of connection with said wall area and a region of connection with the wall area, each



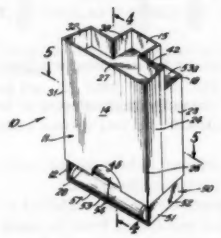
said tab section being for the purpose of curling outwardly about said region of connection upon absorption of said moisture by the inner surface of each said paperboard tab section and thereby forming a vent accommodating escape of vapors from said container; each said tab section uncurling back to said wall area upon drying of said inner surface and thereby closing said vent.

4,497,432

DISPENSER PACKAGE ASSEMBLY

Frank Milia, Commack, N.Y., assignor to Carlisle Laboratories, Inc., Inwood, N.Y.

Filed Oct. 7, 1983, Ser. No. 540,024
Int. Cl.³ B65D *5/38, 5/72*
U.S. Cl. 229—17 B **7 Claims**



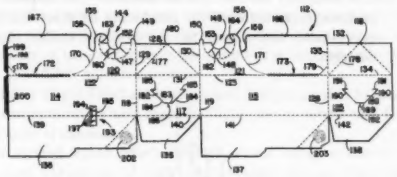
1. A dispenser package assembly comprising a hollow outer casing open at each end; a top margin and a bottom margin at the open ends thereof, a tray member slidably received within the outer casing, said casing comprising a front panel, a rear panel, a first side panel and a second side panel, all interconnected along three spaced parallel fold lines extending from the top margin to the bottom margin of the casing; a side margin on the first side panel, a first hinged tab formed in one corner of the rear panel and inwardly disposed from the top margin, a second hinged tab formed in the opposite corner of the rear panel and inwardly disposed from the top margin, said tabs being swingable inwardly of the casing, opening to overlie the tray when it is not fully received within the casing, and a side flap integral with the rear panel, extending outwardly thereof and secured to the first side panel.

4,497,433

COMBINATION FOOD TRAY

Henry Wischusen, III, Lilburn, Ga., assignor to Rock-Tenn Company, Norcross, Ga.

Continuation-in-part of Ser. No. 414,952, Sep. 3, 1982, abandoned. This application Sep. 20, 1983, Ser. No. 534,186
Int. Cl.³ B65D *5/10*
U.S. Cl. 229—30 **11 Claims**



1. In a carton formed of paperboard or the like including a pair of longitudinally extending side panels held in spaced apart relation by a pair of transversely extending end panels foldably connected to said side panels, and automatic bottom panel means foldably connected to said side and end panels, the improvement comprising:

a pair of cover panels each foldably connected to one of said side panels and extending transversely at least half the distance between the distance between said side panels, said cover panels including means for defining mating recesses in longitudinal free edges thereof such that said recess defining means align when said cover panels are folded inwardly to form an opening for receiving and supporting an item inserted downwardly into said opening; and

means for securing said cover panels in a position folded inwardly to substantially enclose said carton;

said recess defining means comprising U-shaped scores opening toward the longitudinal free edges of said cover panels, and a plurality of break-away scores extending radially from said U-shaped scores to an acurate edge, said radial break-away scores defining tabs therebetween, such that an outer tab of each of said recess defining means overlaps the other recess defining means sufficiently to be beyond an outer tab of said other recess defining means, and

said recess defining means further comprising lock score means for locking said outer tabs when said tabs are folded into said carton upon insertion of said item.

4,497,434

DETECTOR OF THE FLOWING OF A FLUID IN A PIPE AND ENERGY SAVING DEVICE FOR A HOT WATER SYSTEM USING THIS DETECTOR

Jacques Lawless, 1740, 7th. Ave., Grand-Mere, (Quebec), Canada G9T 2E1

Filed Apr. 11, 1983, Ser. No. 483,690
Int. Cl.³ F22B *35/00*
U.S. Cl. 236—23 **11 Claims**

1. A device for detecting the flowing of a fluid in a pipe, comprising:

a tubular element vertically mounted on said pipe for serially interconnecting two portions of this pipe, said tubular element comprising an upper end and a lower end, one of said portions of the pipe being connected to said upper end of the tubular element and the other portion to its lower end;

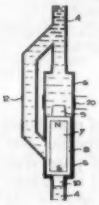
a piston made of a magnetic material slidably mounted within said tubular element, said piston being free to move along said tubular element;

a by-pass conduit interconnecting a part of the tubular element adjacent to its lower end with said one portion of the pipe to allow the fluid to flow from said part of the tubular

element to said one portion, and therefore from the other portion of the pipe to said one portion;

said piston moving upwardly in said tubular element as soon as the fluid starts to flow, to allow said fluid to flow from said other portion to said one portion of the pipe through the by-pass conduit, said piston moving downwardly by gravity to the lower end of said tubular element as soon as the fluid stops flowing; and

means mounted on the tubular element and responsive to said magnetic material for producing an electrical signal every time the piston moves in the tubular element, wherein:



the tubular element has a section greater than the section of the pipe, each portion of the pipe being connected substantially in the middle of the corresponding end of the tubular element, and

the piston has upper and lower ends each provided with a frusto-conical element, each portion of the pipe adjacent to the tubular element being so shaped to match with the corresponding frusto-conical element, said frusto-conical elements cooperating with the shaped ends of the portions of the pipe for absorving shocks when the piston reaches on of the portions of the pipe, in order to eliminate noise resulting from these shocks.

4,497,435

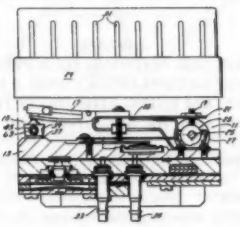
CONTROL AIR EXHAUST FOR HUMIDISTAT

Arnold G. Trobaugh, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 7, 1983, Ser. No. 549,276

Int. Cl.³ G05D *22/00*

U.S. Cl. 236—44 A **1 Claim**



1. An apparatus for controlling the humidity within a space and including a humidity sensing element moveable in response to changes in said humidity for control thereof, said apparatus including:

a base member;

a modulating assembly supported by said base member;

a humidity sensing element supported upon said base member and arranged for positioning control of said modulating assembly to effect said humidity regulation;

a cover for substantially surrounding and protecting said sensing element and said modulating assembly, said cover including a plurality of apertures for permitting the free flow of relatively humid air therethrough;

said modulating assembly including a pneumatic control nozzle for flowing relatively dry pneumatic control fluid therethrough, a rigid control cone coupled to said nozzle and including a pin member movable relative to said cone for nozzle modulation in response to said movement of said sensing element, said nozzle and said cone defining a cavity therebetween having a fixed volume;

a discharge spigot having a first end and a second end, said first end being attached to said modulating assembly in fluid flowing communication with said cavity for receiving said pneumatic control fluid therethrough, said second end terminating adjacent one of said apertures for exhausting said control fluid to a region exterior of said cover.

4,497,436

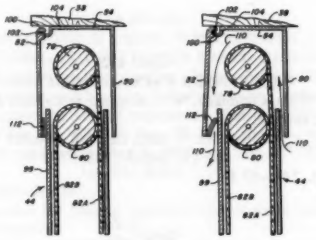
VENTING SYSTEM FOR INSULATING WINDOW SHADE

Daniel L. Ingold, Newfane, and Robert L. Stewart, Brookfield, both of Vt., assignors to Appropriate Technology Corporation, Brattleboro, Vt.

Filed Feb. 17, 1983, Ser. No. 467,390

Int. Cl.³ F24J *3/02;* **F24F** *13/10*

U.S. Cl. 236—49 **9 Claims**



1. A venting system for insulating window shades comprising:

an inverted U-shaped valance adapted to be secured to the top of a window frame, said valance having top, rear and front walls,

a shade roller adapted to be mounted on the window frame within or adjacent to the valance,

an insulating shade on the roller adapted to be drawn from the roller over and spaced from the inside of the window to insulate it, said valance front wall being normally in a first position in sealing engagement with said insulating shade,

sealing tracks adapted to be mounted on the sides of the frame and engage side edges of the shade to seal the space between the window and shade,

means responsive to the temperature in the space between the shade and a window for moving said valance front wall from said first to a second position spaced from said insulating shade when the temperature in the space between the shade and window exceeds a predetermined value, and

a vent disposed between said rear valance wall and said insulating shade to allow air to flow to and from the space between the shade and window and said valance front wall to vent the space between the shade and window when the valance front wall is in said second position.

4,497,437
CONTROL DEVICE WITH A BIMETALLIC ELEMENT UNILATERALLY FASTENED IN A HOUSING

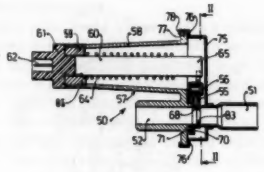
Siegfried Fehrenbach, Markgröningen; Kurt Herbst, Burgstetten, and Eberhard Utz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,945

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208107

Int. Cl.³ G05D *23/19*

U.S. Cl. 236—68 B **4 Claims**



1. In a control device provided with a bimetallic element disposed axially in a metal housing, the improvement comprising:

a metallic holder in one end of said housing,

said metallic holder having at least one passage extending axially thereof,

oppositely disposed axially extending holding grooves in said metallic holder which opens toward said at least one passage,

one end of said bimetallic element is positively disposed in said oppositely disposed axially extending holding grooves, so that said at least one passage partially encompasses said bimetallic element and

a plastic filling filling said at least one passage in said metallic holder which secures said one end of said bimetallic element in said metallic holder.

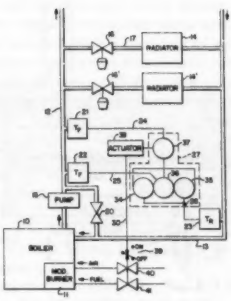
4,497,438
ADAPTIVE, MODULATING BOILER CONTROL SYSTEM

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 23, 1982, Ser. No. 452,533

Int. Cl.³ F24D *3/00*

U.S. Cl. 237—8 R **6 Claims**



1. A thermo-mechanical control apparatus for a modulated burner hot water heating system comprising:

a pair of temperature sensors of the liquid fill type, one of said sensors adapted to sense boiler output temperature and the second of said sensors adapted to sense return flow temperature to the boiler;

a third temperature sensor of the liquid fill type, said third temperature sensor being adjustable in volume for manual reset purposes, said third sensor being adapted to sense boiler output temperature;

a thermo-mechanical actuator comprising

first liquid filled actuator means,

second liquid filled actuator means, and,

liquid filled reset expansion actuator means, having an output port, wherein said thermo-mechanical actuator includes at least three bellows as said first, second and reset liquid filled actuator means,

said first liquid filled actuator means being mounted to cause compression of said reset actuator means when said first means is expanded,

said second liquid filled actuator means being mounted to cause expansion of said reset actuator means when said second means is expanded;

a liquid filled main expansion actuator, adapted to adjust the fuel and air of a modulated burner;

first capillary tube means connecting said one sensor in controlling relation to said liquid filled main expansion actuator and connecting the output port of said reset actuator means to said main expansion actuator so that both the one temperature sensor and the output of said reset actuator means control the setting of said main expansion actuator;

second capillary tube means connecting said second sensor to said second liquid filled expansion actuator means of said thermo-mechanical actuator;

third capillary tube means connecting said third sensor to said first liquid filled expansion actuator means of said thermo-mechanical actuator.

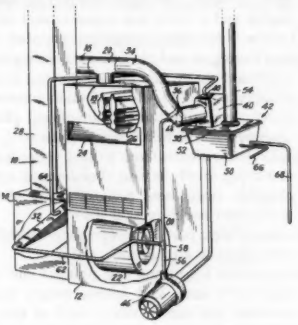
4,497,439
HEAT EXTRACTOR

Dan Ben-Shmuel, and Philip Zacuto, both of St. Johnsville, N.Y., assignors to Heat Extractor Inc., Melrose, Mass.

Continuation-in-part of Ser. No. 907,667, May 19, 1978, Pat. No. 4,340,572. This application May 21, 1982, Ser. No. 380,606

Int. Cl.³ F24D *5/00*

U.S. Cl. 237—53 **8 Claims**



1. For use with a chimney and a furnace fired by a burner, a heat extractor system including:

(a) first means directly connecting the furnace to the chimney,

(b) a vent having an entrance end and an exit end higher than its entrance end,

(c) second means connecting the entrance end of the vent to the furnace,

(d) means for creating a spray of water in the second connecting means to induce a draft therein in the direction toward the exit end of the vent,

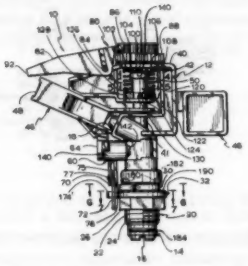
(e) said water being heated by combusted gases from the burner passing through the second connecting means, and
(f) means to utilize the heat of said water,
(g) said vent functioning as a fail-safe such that, if a draft is not induced in said second connecting means, combusted gases from the burner will automatically divert and leave through the chimney, choosing the path of least resistance.

4,497,440
NON-DRAIN VALVE FOR SPRINKLER SYSTEMS
Cecil Galloway, Glendora, Calif., assignor to Brownline Pipe Inc., Pomona, Calif.
Filed Oct. 7, 1982, Ser. No. 433,241
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—201 **8 Claims**

1. A sprinkler system comprising
a plurality of water discharge heads,
a pipe system interconnecting said discharge heads with a pressurized water supply,
a main valve for controlling flow of pressurized water from said supply through said pipe system to said discharge heads, said valve being positioned at an elevation above at least some of said discharge heads whereby water in said pipe system tends to drain from said discharge heads after said main valve is operated to stop flow of water from said water supply, and
non-drain means for decreasing drainage from at least one of said discharge heads, said non-drain means comprising
a non-drain valve body connected in said pipe system adjacent said one discharge head, said body having an inlet, an outlet, a plunger chamber between the inlet and outlet, and a valve seat adjacent said outlet,
a hollow valve plunger slidably mounted in said chamber and having an end closure cooperating with said seat to close said outlet, said plunger having an enlarged piston slidably sealed to walls of said chamber, and having ports connecting the interior of said plunger with said chamber downstream of said piston,
tubular guide sleeve fixed to said valve body, said sleeve extending axially in said chamber and spaced from said chamber walls, said plunger being slidably mounted within and sealed to said sleeve,
an atmospheric port connecting the chamber upstream of said piston to atmosphere, and
spring means for urging said plunger end closure toward said valve seat, said spring means being positioned between said sleeve and a wall of said chamber and extending between said piston and an end of said sleeve adjacent said inlet.

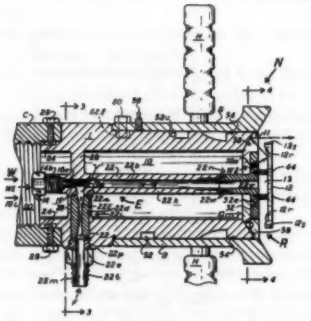
4,497,441
PULSATING SPRINKLER
Ho Chow, River Edge, N.J., assignor to Melnor Industries, Inc., Moonachie, N.J.
Filed Apr. 25, 1983, Ser. No. 488,203
Int. Cl.³ B05B *03/14*
U.S. Cl. 239—230 **7 Claims**

1. In a pulsating sprinkler comprising
(A) a helical torsion spring having an axis;
(B) a sprinkler body having a hollow portion adapted to carry a fluid stream; and
(C) an impact arm mounted on said sprinkler body for oscillating movement toward and away from an impact limiting position, said impact arm being adapted to move away from said impact limiting position under the influence of the stream and toward said impact limiting position under the influence of said spring, said spring operatively connecting adjacent one end thereof said sprinkler body and adjacent the other end thereof said impact arm;
the improvement wherein said sprinkler body and said impact arm each include lug means extending generally



toward and spaced from one another in the direction of the axis of said spring, having a surface laterally exposed substantially at right angles to the axis of said spring and, spaced therefrom, an aperture operatively closed in the direction of the axis of said spring toward the other of said lugs, and said spring has ends which are reversely bent to form incomplete loops a first portion of which engages said surface of said lug means and a second portion of which enters said aperture, said loops being disengageable from and re-engageable with said lug means, without further opening or closing of said loops and without the use of tools.

4,497,442
FOAM-APPLYING NOZZLE HAVING ADJUSTABLE FLOW RATES
Leslie P. Williams, Port Neches, Tex., assignor to Cause Consequence Analysis, Inc., Vidor, Tex.
Filed Apr. 6, 1983, Ser. No. 482,499
Int. Cl.³ A62C *31/12*
U.S. Cl. 239—437 **7 Claims**



1. A nozzle assembly for applying a foam of the type which includes an inner barrel and a telescoping outer barrel each having an axial bore with an inlet and an outlet, and eductor means within the inner barrel having means for mixing a first portion of a liquid stream flowing through the inner barrel

with a foam-forming concentrate and discharging the foam concentrate and liquid mixture through a discharge opening in proximity to the inner barrel outlet, the improvement residing in means for focusing the stream of foam discharged from the nozzle, comprising:

a slanted reflection edge formed on the outlet of the inner barrel;

the eductor means having:

a mixing plate mounted substantially perpendicular to the longitudinal axis of the axial bore of the inner barrel;

a deflection plate mounted inwardly and spaced from said mixing plate to form a mixing chamber therebetween for receiving the foam-forming composition discharged from the eductor means; and,

said deflection plate being formed with a plurality of ducts through said deflection plate to direct a second portion of the liquid stream flowing through the inner barrel to said mixing chamber, said ducts being formed in a slanting direction from the longitudinal axis of the inner bore whereby the second liquid stream portion first reflects from said mixing plate to said slanted reflection edge of the inner barrel and then reflects from said slanted edge substantially parallel to the axial bore of the inner barrel.

4,497,443

INJECTION VALVE

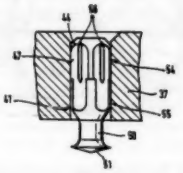
Rudolf Sauer, Benningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,214

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151020

Int. Cl.³ B05B *1/02, 1/26;* **F02M** *69/04, 61/16*

U.S. Cl. 239—533.3 **5 Claims**



1. An injection valve for fuel injection systems of internal combustion engines, comprising a movable valve element arranged to cooperate with a fixed valve seat provided in a nozzle body, characterized in that said nozzle body has a guide bore downstream of said valve seat, a fuel flow control insert in said bore, said fuel flow control insert in said bore having a linear axis, said fuel flow control insert having axially extending grooves open toward said guide bore, said axially extending grooves further including a plurality of axially extending faces tilted relative to said linear axis of said insert whereby the distance between said linear axis and each said face is smaller at an end oriented toward said valve seat than at an end remote therefrom thereby forming a flow cross section which decreases in the direction of fluid flow, and said grooves are arranged to meter and prepare a fluid to be injected.

4,497,444

SHOWER HEAD

Don C. Arnold, Buffalo Grove, Ill., assignor to Beatrice Foods Company, Chicago, Ill.

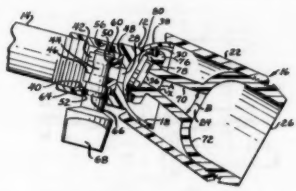
Filed Oct. 28, 1982, Ser. No. 437,509

Int. Cl.³ B05B *15/08, 1/30*

U.S. Cl. 239—587 **13 Claims**

1. In a shower head comprising a first portion adapted to be attached to a water supply and a spray head pivotally attached to said first portion, the improvement comprising, in combination; said first portion including a shallow, curved, socket-defining shell, an aperture in said shell and a flow path for communicating between the water supply and the aperture;

said spray head comprising an inner spray body and a separable outer sleeve, said spray body having a flow limiting vortex chamber with water inlet opening means at one end of said spray body, a spray outlet at the other end and a diverging flow path portion therebetween, one end of said sleeve slidably engaged behind said shell and the other end being threadably engaged with said spray body at said



other end to pivotally secure said spray body to the inside surface of said shell; and

a resilient O-ring carried by said spray body at said one end and disposed around said vortex chamber to slidably and sealingly engage the inside surface of said shell along an uninterrupted line enclosing said aperture at all pivot positions of said spray head to prevent leakage between said spray body and said concave surface while allowing communication between said aperture and said water inlet opening means of said vortex chamber.

4,497,445

DIFFUSION APPARATUS

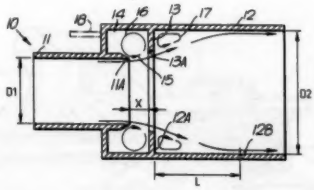
Richard C. Adkins, Buckinghamshire, and James O. Yost, Bristol, both of England, assignors to Rolls-Royce Limited, London, England

Continuation of Ser. No. 241,419, Mar. 6, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 540,102

Claims priority, application United Kingdom, Mar. 10, 1980, 8008070

Int. Cl.³ F02C *7/00*

U.S. Cl. 239—590 **16 Claims**

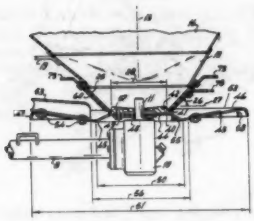


1. Diffusion apparatus comprising an upstream duct, a downstream duct, the adjacent ends of the ducts defining a sudden enlargement of flow area, a fence arranged downstream of the downstream end of the upstream duct and defining the upstream end of the downstream duct, the fence having a free edge defining a flow area intermediate between that defined by the adjacent ends of the two ducts, a chamber provided at the outside of the upstream duct and having an opening defined by the downstream end of the upstream duct and the free edge of the fence, the chamber having a bleed flow rate of less than 5 percent, and wherein the area ratio of the ducts at said adjacent ends thereof lies between 1.4 and a minimum greater than 1.

4,497,446
SPREADER

Ary van der Lely, Maasland, and Cornelis J. Gerardus Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Filed Aug. 18, 1982, Ser. No. 409,024
Claims priority, application Netherlands, Aug. 21, 1981, 8103896
Int. Cl.³ A01C *17/00*
U.S. Cl. 239—661 23 Claims

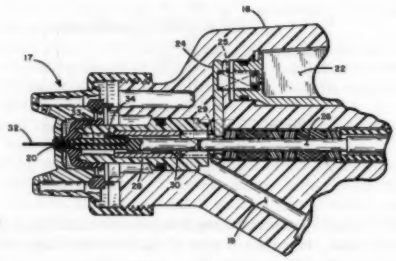


1. A spreader for spreading granular or powdery material or both, comprising a container delivery member having an outlet port, a distribution member mounted for rotation about an upwardly extending rotary axis, said distribution member forming at least partly a floor of said container delivery member and providing support for said container delivery member, said outlet port being provided in a wall portion of said container delivery member near a lower side thereof adjacent said distribution member, said wall portion having said outlet port being disposed at an angle less than 90° relative to said distribution member and to the horizontal when the spreader is on level ground, said distribution member having a downwardly conically flaring part located beneath said outlet port to receive a flow of said material therefrom.

4,497,447
ENERGY DAMPING DEVICE FOR SPRAY GUN

Gordon V. Mommsen, Brooklyn Center, and Anil Marfatia, Maple Grove, both of Minn., assignors to Graco, Inc., Minneapolis, Minn.

Filed May 23, 1983, Ser. No. 496,830
Int. Cl.³ B05B *5/00*
U.S. Cl. 239—691 5 Claims



1. In an electrostatic spray gun of the type having fluid passages therein for the passage of fluid therethrough, and having passages therethrough for containing electrically conductive components for carrying a voltage to a forwardly projecting electrode, the electrode and the forwardmost fluid passage being in axial alignment, the improvement comprising

(a) a fluid ejection orifice proximate the forward end of said forwardmost fluid passage;

(b) a fluid valve adapted for seating in fluid sealing relationship in said fluid ejection orifice;

(c) a conductor in said fluid valve, said conductor having a segment projecting forwardly through said fluid ejection orifice to form said forwardly projecting electrode, and said conductor having a further segment projecting externally of said fluid valve into said forwardmost fluid passage;

(d) a resistive element in said forwardmost fluid passage, said resistive element having an axial opening therethrough sized to permit axial movement of said fluid valve therein, said further segment of said conductor in said fluid valve being in electrical contact against said resistive element;

(e) means for electrically connecting said resistive element to further electrically conductive components in said spray gun passages;

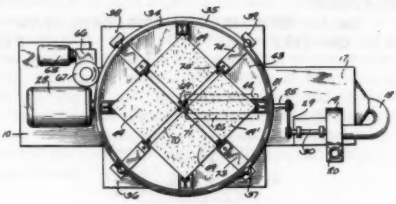
(f) means for coupling said forwardmost fluid passage to further fluid passages in said spray gun; and

(g) means for axially moving said fluid valve in opening and closing relationship to said fluid flow.

4,497,448
OFFSET ORBIT FLUFF GENERATOR

Curt G. Joa, Ocean Ridge, Fla., and Edmund Radzins, Sheboygan Falls, Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Mar. 14, 1983, Ser. No. 474,752
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—186.4 3 Claims



1. Apparatus for disintegrating wood pulp sheets into their constituent fibers, said sheets being stacked congruently to form bales having generally planar bottom faces, said apparatus comprising:

tub means having a hollow interior and a bottom opening lying in a horizontal plane,

means mounting said tub means for rotation about a vertical axis that is central to said interior and perpendicular to the horizontal plane of said bottom,

a planar bed below said bottom having a port therein,

a power driven cutting mill having radially extending blades, said mill being mounted for rotating about a horizontal axis in parallelism with the bed, the blades of said cutting mill extending through said port for performing a cutting action on bales bearing on said bed,

a plurality of guide means mounted to the interior of said tub means and arranged around its axis of rotation for retaining a corresponding plurality of bales against radial movement and permitting vertical movement such that the bottom surfaces of said bales may settle on said bed, said guide means being arranged such that all portions of the bottom surface of each bale is offset radially outwardly from the tub means axis of rotation, and

power means for rotating said tub means about said vertical axis so the retained bales will move in an orbital path radially offset from said axis to thereby sweep said bales successively over said cutting mill blades for said cutting action to occur over the entire bottom surface of each bale.

4,497,449

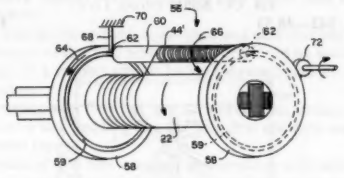
METHOD OF AND ARRANGEMENT FOR ASSEMBLING ELECTRICAL COILS AROUND TRANSFORMER CORES

Kou C. Lin, Hermitage, and Charles E. Burkhardt, Sharon, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 11, 1982, Ser. No. 387,335

Int. Cl.³ H01F *41/08*

U.S. Cl. 242—4 R **4 Claims**



1. A method of assembling a coil around a straight section of a core in the manufacture of a transformer, said method comprising the steps of:

(a) placing a coil supporting straight tubular member around said core section in a way which allows said member to rotate about its own axis and around the core section, said tubular member being provided with circular end plates diametrically larger than said tubular member and fixedly attached concentrically to the ends of said tubular members;

(b) providing annular grooves on the confronting sides of said end plates concentrically around said tubular member;

(c) providing a supply of coil material such that the material is ready to be wound into a coil;

(d) supporting said supply of coil material in a wound fashion around a separate tubular carrier shorter in length than said tubular member;

(e) supporting said carrier for rotation about its own axis adjacent to and in parallel relationship with said tubular member by means extending outward from the opposite ends of said carrier and into said grooves;

(f) connecting one end of said coil material to said tubular member;

(g) causing said tubular member to rotate by means of a power driven mechanism; and

(h) preventing said carrier from moving other than rotating about its axis, whereby rotation of said tubular member about its own axis causes said coil material to unwind from its carrier and onto the tubular member.

4,497,450

FILAMENT WINDING MACHINE

Kurt Schefer, Winterthur, and Kurt Salvisberg, Gächlingen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 26, 1982, Ser. No. 411,701

Claims priority, application United Kingdom, Nov. 10, 1981, 8133836

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 A **12 Claims**

1. A winder for thread comprising

a friction drive member rotatable about a longitudinal axis thereof to receive a thread thereabout,

a first chuck movable along a first path between a rest position spaced from said friction drive member and a winding position adjacent said friction drive member to receive a thread from said drive member;

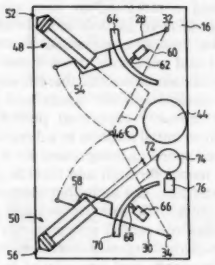
a second rotatable chuck movable along a second path between a rest position spaced from said friction drive member and a winding position adjacent said friction drive member to receive a thread thereon,

said paths being so disposed that a chuck moving towards the winding position thereof intercepts a length of thread extending between said friction drive member and a chuck moving away from the winding position thereof,

a headstock structure,

a pivotally mounted swing arm supporting one of said chucks,

a two stage extensible and retractable means between said headstock structure and said swing arm for pivoting said swing arm to move said one chuck in said respective path, and



control means for operating one stage of said means upon termination of a winding operation to move said swing arm and said one chuck in said respective path to a position at which a length of thread extends between said one chuck and said friction drive member for interception by the other chuck and for sequentially operating the other stage to move said one chuck to said rest position thereof after transfer of the thread to said other chuck.

4,497,451

PNEUMATIC DRIVE FOR A SWINGABLE SPOOL HOLDER

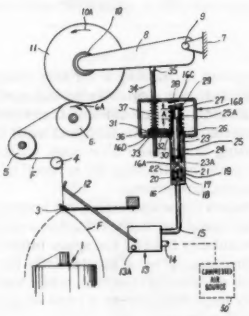
Hans Guggemos, Peterthal, and Rolf-Dieter Weber, Kempten, both of Fed. Rep. of Germany, assignors to Saurer-Allma GmbH, Kempten, Fed. Rep. of Germany

Filed Aug. 4, 1983, Ser. No. 520,103

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1982, 3235789

Int. Cl.³ B65H *63/02*

U.S. Cl. 242—37 R **7 Claims**



1. In a control arrangement for a pivotally supported spool holder which rotatably supports a spool which can be rotationally driven by contact between its periphery and a surface on a moving friction member, including pneumatic drive means for selectively swinging said spool holder between an operating position and a rest position in which said periphery of said spool is respectively engaging and spaced from said surface on

said friction member, and a compressed-air line which is connected to said pneumatic drive means and to a control valve, said control valve having a vent hole and having a feeler lever which can be moved between first and second switching positions and which engages a thread which is to be wound up on said spool, wherein when said feeler lever is in said first switching position said control valve connects said compressed-air line with said vent hole and wherein when said feeler lever is in said second switching position said control valve connects said compressed-air line to a compressed-air source, the improvement comprising throttle valve means for controlling air flow through said compressed-air line, said throttle valve means being responsive to air flow in said compressed-air line for restricting the flow of compressed air therethrough in a direction toward said pneumatic drive means and for permitting a rapid flow of compressed air therethrough in a direction away from said pneumatic drive means, said pneumatic drive means having a movably supported piston member which moves away from an initial position in a direction of movement at a predetermined speed as compressed air is supplied to said pneumatic drive means through said throttle valve means and said compressed-air line, and including clamping means cooperable with said pneumatic drive means and with a movably supported operating rod which is operatively coupled to said spool holder for permitting said piston member to move a predetermined distance in said direction of movement relative to said operating rod and for thereafter causing said operating rod to be operatively coupled to and to be moved in said direction of movement by said piston member.

4,497,452

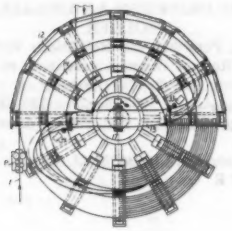
TWIN COIL STRIP ACCUMULATOR

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06721

Continuation-in-part of Ser. No. 421,066, Sep. 22, 1982,. This application Dec. 5, 1983, Ser. No. 557,948

Int. Cl.³ B65H *17/48, 17/42, 75/02*

U.S. Cl. 242—55 **22 Claims**



1. An apparatus for storing a variable uninterrupted length of forwardly advancing strip material disposed in two adjacent coaxial spiral coils, each of multiple turns between the innermost and outermost convolutions, and with the convolutions thereof coursing in opposite directions, with transition curve between the coils for effecting the reversal of the direction of the convolutions, comprising

(a) guide means for withdrawing the innermost convolution of the first spiral coil in the direction away from both coils and substantially beyond the space inside said coils into a large transition curve of substantially the same radius of curvature as said convolutions, while simultaneously and gradually imparting thereto a twist of approximately 90°, at the farthest point,

(b) return guide means for the strip to follow a course roughly symmetrical to said outward course i.e., while imparting an additional 90° twist for joining the latter with the second coil at a point substantially antipodal to the point of departure of said strip from the first coil wherein the strip is bent at a curvature comparable to that of the radius of said coils, and

(c) said guide means comprising a plurality of cylindrical bodies for controlling the free transport of the strip through the transition curve with no more than tangential contact of the strip with said bodies.

4,497,453

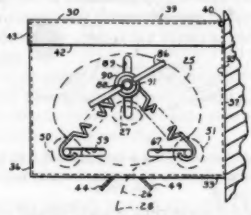
DISPENSER FOR INTERNALLY SELF-SUPPORTED ROLLED MATERIAL

Henry P. Butcher, 2843 NE. 18th Ct., Ocala, Fla. 32670

Filed May 16, 1983, Ser. No. 494,883

Int. Cl.³ B65H *19/00, 17/12*

U.S. Cl. 242—55.53 **4 Claims**



3. In a wall mounted dispenser having an interior compartment and an elongated web of flexible material located in the compartment, the improvement wherein said material is plastic material, said web has inner and outer end portions and, inwardly of the outer end portion, is rolled entirely upon itself to provide an internally self-supported roll of said material, and said dispenser has a horizontally arranged bottom wall provided with an elongated slot having opposite sides and opposite ends, a pair of upright end walls fixed to the bottom wall at said opposite respective ends, and a pair of elongated cylindrical rollers horizontally spaced apart within the compartment and located laterally of and at said opposite respective sides; said end walls having two pairs of horizontally extending slots, said pairs being respectively associated with said rollers, and the slots of each of said pairs being horizontally aligned and located in said end walls laterally of and at one of said opposite sides; each of said rollers having opposite ends and elongated axial extensions located at the opposite respective ends of the roller, said extensions being respectively arranged to project to the exterior of the dispenser through the slots associated with said roller; said dispenser having a pair of tension springs respectively secured to said end walls and to the extensions of one of said rollers for continuously urging said one roller toward the other of said rollers, and said roll being restingly supported on said rollers with the outer end portion of the web extending through the space therebetween and through the slot in said bottom wall.

4,497,454

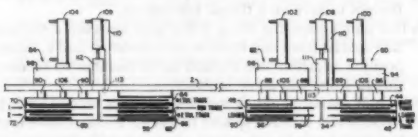
TAPE LOADING MACHINE

George M. Woodley, Shrewsbury, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Mar. 11, 1983, Ser. No. 474,467

Int. Cl.³ B65H *19/20, 19/16, 21/02*

U.S. Cl. 242—56 R **10 Claims**



10. A method of operating a machine for loading C-O cas-

settes with a use tape so that a first use tape from a first tape supply reel is automatically spliced to a second use tape from a second tape supply reel, whereby (a) when said first supply reel is depleted the machine can continue to load cassettes with use tape from said second supply reel and (b) during the time that said machine is loading cassettes with said second use tape, the depleted first supply reel can be replaced with another reel of use tape, said method comprising the steps of:

(a) splicing the leading end of a first use tape from a first supply reel to the trailing end of a waste tape at a first station;

(b) pulling said spliced waste tape and said first use tape far enough so that said waste tape is displaced by said first use tape at a second station located downstream of said first station;

(c) cutting said first use tape at said second station so as to form a new leading end for said first use tape and a new waste tape;

(d) loading said first use tape commencing with said leading end thereof into a plurality of cassettes so that said cassettes are loaded one at a time;

(e) when said first supply reel is nearly depleted, cutting said first use tape so as to form another new leading end at said second station;

(f) splicing said another new leading end to said new waste tape at said second location;

(g) cutting said first use tape at said first station so as to form a new trailing end;

(h) splicing said new trailing end to the leading end of a second use tape from a second supply reel;

(i) pulling said second use tape far enough so that said first use tape is displaced by said second use tape at said second station;

(j) cutting said second use tape at said second station so as to form a new leading end therefor and another waste tape; and

(k) loading said second use tape commencing with said new leading end thereof into a plurality of cassettes so that said cassettes are loaded one at a time.

4,497,455

WINDING MACHINE

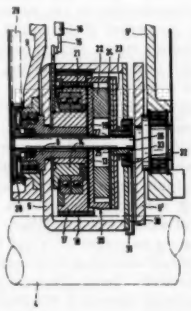
Eberhard Kampf, and Armin Hutzenlaub, both of Wiehl, Fed. Rep. of Germany, assignors to Erwin Kampf GmbH & Co Maschinenfabrik, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,868

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215204

Int. Cl.³ B65H *35/02;* **H02K** *49/04*

U.S. Cl. 242—56.9 **4 Claims**



1. A winding machine for winding a longitudinally slit strip, said winding machine having a number of winding stations; each winding station comprising: a driving shaft; a frictional wheel; an eddy-current clutch which couples the frictional wheel to the driving shaft; wherein the clutch includes a clutch housing and a clutch disk which are adjustably spaced so that the torque transmitted between the clutch housing and the clutch disk may be varied; wherein the clutch disk is axially movable on the driving shaft, and further comprising an adjusting member coupled with the clutch disk to allow for axial displacement of the clutch disk; whereby the winding tension of each winding station is independently and relatively adjustable.

4,497,456

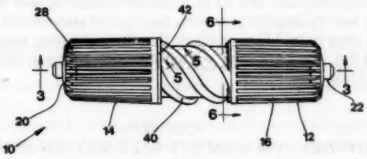
VAPOR-DISPENSING PAPER ROLL HOLDER

James R. Crapser, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 25, 1983, Ser. No. 516,507

Int. Cl.³ B65H *19/00*

U.S. Cl. 242—55.55 **13 Claims**



1. A rolling device mountable on and between opposed sockets and adapted for use in supporting a roll of toilet tissue, comprising:

a pair of axially aligned body members together forming an elongated cage, each body member including an axial protuberance engagable with one of the sockets;

a vaporizable, air-treating substance within the cage; and

a spring spreading the body members to a relative axial adjustment and compressible therebetween to allow suspension of the cage between the opposed sockets of varying spacings, said spring comprising a material which undergoes stress relaxation at ambient temperatures such that its spreading force drops readily to near zero to reduce frictional forces between said protuberances and the sockets for whatever spacing the spring has accommodated,

whereby the device will freely rotate in the sockets as paper is pulled from a paper roll mounted thereon to increase the rate of vapor dispersing from within the cage.

4,497,457

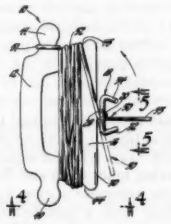
LINE HOLDER

William O. Harvey, 1240 E. 26th Rd., Cadillac, Mich. 49601

Filed Aug. 18, 1983, Ser. No. 524,758

Int. Cl.³ B65H *75/34, 75/36*

U.S. Cl. 242—96 **7 Claims**



1. Apparatus for storing and selectively dispensing a line comprising, in combination, a reel for storing a predetermined diameter line in a coil substantially defined by a reel axis, reel

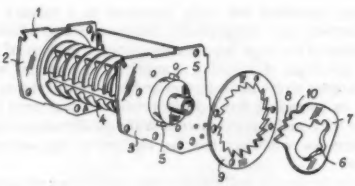
support means for supporting said reel and angularly moving said reel so as to change the position of said reel axis; and a line control means secured to said reel for selectively engaging and disengaging said line so as to selectively dispense said line from said reel while said line uncoils from said reel in a certain direction, said line control means including two opposed hooks which curve in the same direction and a hook support which supports said hook a predetermined distance from said reel which is greater than said line diameter so as to permit said line extending between said hooks and said reel, said hooks engaging said line so as to prevent uncoiling said line from said reel by angularly moving said reel to a first position in which said line cannot uncoil from said reel and then angularly moving said reel to a second position in which one of said hooks engages said line by said line extending between said reel and said one hook and through said one hook in said certain direction, thereby preventing uncoiling of said line when said reel axis substantially points in said certain direction, said one hook disengaging said line so as to permit uncoiling said line from said reel by angularly moving said reel to said second position and then to said first position, thereby permitting uncoiling of said line when said reel axis substantially points in said certain direction.

4,497,458

WINDER FOR A SAFETY BELT HAVING A RAPID LOCKING AND UNLOCKING ACTION AND A REDUCED OPERATING NOISE

Daniel Gueguen, Montesson, and Jacques Rothera, Saint Michel sur Orge, both of France, assignors to Autoliv AB, Vargarda, France

Filed Mar. 15, 1983, Ser. No. 475,662
Claims priority, application France, Mar. 18, 1982, 82 04584
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 B **9 Claims**



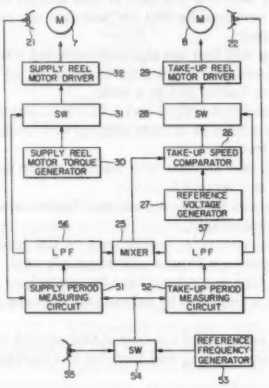
1. An automatically-locked winder for a safety belt, the winder comprising a support, a mandrel rotatively mounted on the support and around which mandrel a strap of the safety belt is wound, a torsion spring associated with the mandrel for biasing the mandrel in a winding direction, a locking device cooperative with the mandrel for locking the mandrel against rotation and preventing the unwinding of the strap when a sudden pull is exerted on the strap, the locking device comprising first means rigid with the support, second means drivenly connected to the mandrel, the first means cooperating with the second means to lock the mandrel against rotation, one of said first means and second means comprising projections for engagement in recesses provided in the other means, abutment means being provided on only one of said first and second means which prevent, in normal use of the winder, the full engagement of said projections in said recesses, said abutment means being destructible in the event of impact resulting in a sudden pull on the strap, wherein said first means comprise a ratchet wheel having inner teeth and fixed to the support and said second means comprise a cam having an internal cam surface cooperating with a cam-driving element kinetically integral with said mandrel, said cam further having outer teeth for engaging the inner teeth of the ratchet wheel, said destructible abutment means comprising a small additional tooth associated to the outer teeth of the cam and adapted, in normal use of the winder, to prevent full engagement of the outer teeth of the cam in the inner teeth of the ratchet wheel, said additional tooth being destroyed in the event of impact by the force exerted between said inner teeth and outer teeth.

4,497,459

TAPE DRIVE CONTROL APPARATUS

Tadashi Yoshino, and Masayuki Mamei, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 19, 1983, Ser. No. 562,861
Claims priority, application Japan, Dec. 20, 1982, 57-224236
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—186 **3 Claims**



1. A tape drive control apparatus comprising: supply and take-up reels which are driven by supply and take-up reel motors, respectively; first and second rotation detecting means detecting rotation of said supply and take-up reels and for generating signals having frequencies corresponding to rotational velocities, respectively; tape driving means for driving a magnetic tape while the magnetic tape is brought into tight contact with a capstan and a pinch roller; third rotation detecting means for detecting rotation of said capstan and generating a signal having a frequency corresponding to a rotational velocity of said capstan; first period measuring means, having a first input terminal for receiving an output generated from said first rotation detecting means and a second input terminal for receiving a clock signal, and for generating an output substantially corresponding to the number of clock signals received during one period of the output generated from said first rotation detecting means; second period measuring means, having a first input terminal for receiving an output generated from said second rotation detecting means and a second input terminal for receiving the clock signal, and for generating an output corresponding to the number of clock signals received during one period of the output generated from said second rotation detecting means; first and second low-pass filters for receiving the outputs generated from said first and second period measuring means; mixing means for mixing outputs from said first and second low-pass filters; velocity comparing means for comparing an output from said mixing means with a reference voltage and generating an output corresponding to a difference therebetween; torque generating means for generating a constant voltage; reference frequency signal generating means for generating a signal having a predetermined frequency; first switching means for supplying as the clock signal the signal output from said reference frequency signal generating means to said first and second period measuring means in a fast forward mode wherein the magnetic tape is driven by only said supply and take-up reel motors without using said tape

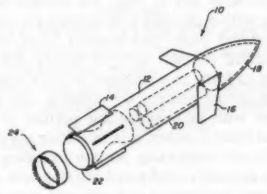
driving means with said capstan, and for supplying as the clock signal the signal output from said third rotation detecting means to said first and second period measuring means in a constant-speed mode wherein the magnetic tape is driven by said tape driving means; second switching means for supplying the output from said torque generating means to said supply reel motor in the fast forward mode and the output from said first low-pass filter to said supply reel motor in the constant-speed mode; and third switching means for supplying the output from said velocity comparing means to said take-up reel motor in the fast forward mode and the output from said second low-pass filter to said take-up reel motor in the constant-speed mode.

4,497,460

ERODALE SPIN TURBINE FOR TUBE-LAUNCHED MISSILES

Kenneth G. Thorsted, Fredericksburg, and John W. Pennington, Spotsylvania, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1983, Ser. No. 478,747
Int. Cl.³ F42B *13/24*
U.S. Cl. 244—3.3 **3 Claims**



1. An improved tube-launched missile of the type having an airframe with canted fins and canards, a payload disposed in the forward end of said airframe, a propellant charge disposed in said airframe aft of said payload, and a nozzle disposed in said airframe aft of said propellant charge for ejecting thrust-producing exhaust gases generated by said propellant charge, wherein the improvement comprises:

an erodable spin turbine in the form of a cylinderical sleeve;

a forward portion of said cylinderical sleeve defining a skirt portion of the nozzle; and,

an aft portion of the cylinderical sleeve having a plurality of contiguously disposed axial slits disposed equidistant about the entire cylinderical sleeve and extending forward from its aft extremity for defining a plurality of rearwardly extending tabs therebetween;

each tab being partially bent inwardly about a diagonal bend line defined between adjacent axial slits defining tabs therebetween to form a plurality of neutral vanes and a plurality of lift vanes;

said neutral vanes being integrally colinear with said skirt whereby the exhaust gas stream flows substantially parallel to said neutral vanes;

said lift vanes lying obliquely within the exhaust gas stream whereby the plane of said lift vanes intersecting the axial flow of the exhaust gas stream defines an angle of attack;

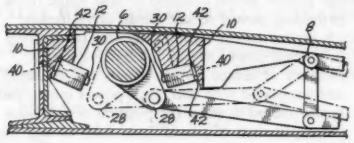
whereby said lift vanes are subjected to a lift force due to the flow of the exhaust gas stream across its surface with a component of said force imparting an angular torque to said missile as it traverses its launch tube and the lift vanes are effectively eroding away due to temperature and kinetic energy of exhaust gas impinging thereon.

4,497,461

SNUBBING APPARATUS FOR AN AIRCRAFT CONTROL SURFACE ACTUATOR

Dennis R. Campbell, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 24, 1982, Ser. No. 422,530
Int. Cl.³ B64C *19/00*
U.S. Cl. 244—75 R **13 Claims**



1. In combination with an aircraft control system of the type having a movable control surface, and an actuator for producing movement of said control surface, the improvement which comprises:

snubber means for stopping movement of a movable portion of the actuator beyond a normal predetermined stop position and absorbing its kinetic energy; said snubber means comprising a fixed member, a movable member, a variable volume chamber defined between the fixed member and the movable member, said chamber including orifice means, and a body of extrusible material substantially filling the chamber; and

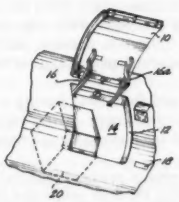
contact means carried by said movable portion of the actuator for contacting the movable member when said movable portion of the actuator moves beyond said predetermined position and pushing the movable member against the extrusible material to decrease the volume of the chamber and to cause the extrusible material to be extruded through the orifice means.

4,497,462

OUTWARD OPENING ELECTRICALLY POWERED PLUG-TYPE CARGO DOOR

Tomio Hamatani, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 28, 1983, Ser. No. 479,676
Int. Cl.³ B64C *1/14*
U.S. Cl. 244—129.5 **14 Claims**



1. In an aircraft having an entry opening formed in the body of the aircraft, a door assembly for closing said opening, said door assembly comprising:

a door;

hinge means associated with said door for pivotally attaching said door to said body for swinging movement of said door between a first position in which said door lies within said opening and a second position in which said door is spaced from said opening, said hinge means being constructed and arranged to move an upper edge of said door

outboard from said body as said door moves from said first position to said second position;

hinge drive means coupled in driving relationship to said hinge means for driving said door between said first and second positions;

latch means operable when said door is in said first position to place said door in a latched position in which movement of said door to said second position is prevented;

latch drive means drivingly coupled to said latch means to operate said latch means;

hinge power means coupled to said hinge drive means for providing power to said hinge drive means;

latch power means coupled to said latch drive means for providing power to said latch drive means;

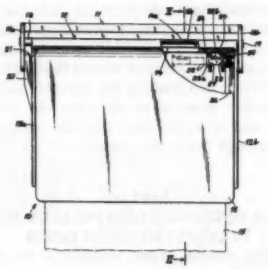
a plurality of sensor switch means spaced about said door and associated with said hinge power means and said latch power means to sense the position of said door to control the application of power from each of said hinge power means and latch power means to said hinge drive means and latch drive means in response to the sensed position of said door.

4,497,463

SINGLE-HANDEDLY FLIPPABLE BAG HOLDER

Rainer Wendel, Berlin, Fed. Rep. of Germany, assignor to Susanne Spilker, Berlin, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,681
Int. Cl.³ B65B *67/12*
U.S. Cl. 248—95 **7 Claims**



1. A holder for a waste-disposal bag, comprising:

a bracket fixedly mounted on an upright support;

a rectangular frame articulated to said bracket for swinging about a horizontal axis between a depending withdrawn position and a substantially level utilization position, said bracket being provided with stop means arresting said frame in said utilization position, said frame having sidewalls provided with a pair of aligned holes offset from said pivotal axis;

a lid overlying said frame and having a lug projecting into the interior of said frame in the vicinity of one of said sidewalls, said lug having an aperture aligned with said holes;

a pair of hinge pins of resilient material on said lid respectively projecting through said holes and defining a horizontal swing axis for said lid, one of said hinge pins being rigid with said lid, the other of said hinge pins traversing said aperture and being provided with a barb and a head bearing upon said lug from opposite sides for substantially immobilizing said other of said hinge pins relatively to said lug in an axial direction;

spring means anchored to said frame and to said lid for biasing the latter into a closure position in all-around contact with said frame, said lid having an extension projecting beyond said frame in said closure position for enabling a user to swing said frame about said pivotal axis from said depending position into said utilization position and thereupon lifting said lid off said frame in a continuing swing motion against the force of said spring means; and

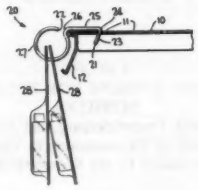
a removable rectangular insert resiliently fitted into said frame for supporting a bag with an open end facing upward in said utilization position.

4,497,464

SUPPORT HOOK AND ASSEMBLY FOR MERCHANDISING DISPLAY

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317

Continuation-in-part of Ser. No. 358,868, Mar. 17, 1982, Pat. No. 4,476,983. This application Sep. 23, 1982, Ser. No. 422,303
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—220.3 **12 Claims**



1. A support hook for supporting apertured items from a body member for purposes of display, said body member having a forward edge and at least one surface including said forward edge with a through hole defined therein and spaced from said forward edge, said support hook comprising an integral elongated rod-like member having first and second ends and bent to form, in a common plane, a supporting position and a mounting portion for securing said hook to said body member with said supporting portion projecting forwardly of said body member, said mounting portion including said first end, said supporting portion including said second end and being generally configured as a ring with a gap formed therein between said second end and said mounting portion, said gap being of sufficient size to permit said apertured items to be suspended from said ring by inserting said second end of said member through the apertured items, and wherein said mounting portion includes a first section having said first end adapted for insertion down through said through hole and a second section which extends generally above and along said body member when said hook is deployed with said first section inserted in said through hole; wherein said first section of said mounting portion includes a bend such that said first end extends generally upward toward said body member from beneath when the hook is deployed on the body member, and further comprising an elastic band stretched between said supporting portion and said bend so as to be flexed by a portion of said body member.

4,497,465

PIVOTAL MECHANISM UPON WHICH TRACKING MIRRORS AND THE LIKE USED IN OPTICAL SYSTEMS MAY BE MOUNTED

Lester M. Yeakley, Boulder, and Karen M. Fitzgerald, Lafayette, both of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Mar. 31, 1983, Ser. No. 481,045
Int. Cl.³ A47F *7/14*
U.S. Cl. 248—466 **6 Claims**

1. An improved flexural mechanism for pivoting a first object a few degrees plus or minus about an axis of rotation comprising:

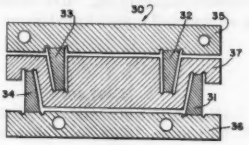
a plurality of spaced-apart base sections lying in a first plane;

a mounting surface lying in a second plane; and

a plurality of flex arm pairs coupling said base sections to said mounting surface, each of said pairs comprising a first flex arm extending from a first of said base sections to said

mounting surface, and a second flex arm extending from a second of said base sections to said mounting surface, said axis of rotation passing through a point where said first and second flex arms, or the extensions thereof, appear to cross when said mechanism is viewed from an end thereof;

said base sections, mounting surface, and flex arm pairs being characterized as initially forming part of an integral sheet of flexible material, which material has a pattern placed



therein that defines the size, shape, and location of said base sections, mounting surface, and flex arm pairs;

said base sections being affixed to a suitable base material, and said first object being affixed to said mounting surface;

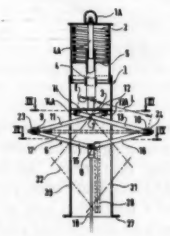
whereby if one of said base material or first object is held stationary, the other of said base material or first object may be selectively pivoted a few degrees plus or minus about said axis of rotation.

4,497,466

SPRING SUPPORT DEVICE FOR PIPEWORK

Jean Perrier, Les Essarts-Leroi, France, assignor to Stein Industrie, Velizy-Villacoublay, France

Filed Aug. 20, 1982, Ser. No. 409,808
Claims priority, application France, Sep. 4, 1981, 81 16839
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—588 **3 Claims**



1. A spring support device capable of large vertical displacement and for supporting relatively light pipework, wherein the device includes an articulated parallelogram linkage comprising upper arms and lower arms;

(a) a first hinge connected to a fixed point and joining said upper arms intermediate their ends;

(b) a second hinge joining said lower arms and connected to a load, and vertically opposite the first hinge; and

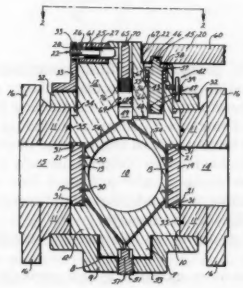
(c) two side hinges in the same horizontal plane joining ends of said upper and lower arms, the two upper arms of the parallelogram linkage that pass through the first hinge having extensions projecting beyond the first hinge, a plate overlying the extensions, the ends of said extensions slidably bearing against said plate, a compression spring positioned above said plate and means for transmitting said load force acting on said plate to said compression spring, the extensions being considerably shorter than the balance of the upper arms forming sides of the parallelogram linkage to provide a spring support device subjected to relatively small load variation between spring compressed and extend positions and which multiply the vertical displacements of the spring as seen by the pipework so supported.

4,497,467

PLUG VALVE WITH HYDRAULICALLY ACTUATED SEALS

Carl O. DeWald, 3920 Avenida Verano, Thousand Oaks, Calif. 91360, and Jack H. Pollock, 1428 W. 132nd St., Gardena, Calif. 90249

Filed Sep. 15, 1982, Ser. No. 418,590
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—78 **8 Claims**



1. A rotary plug valve comprising:

a body having an inlet duct and an outlet duct;

a rotatable valve plug in the body having a port for fluid communication between the ducts, the valve having an open position where at least part of the port overlaps the ducts, and a closed position where no part of the port overlaps the ducts;

means mounted on the plug for forming a pressurizable seal with the body;

a fluid reservoir containing a hydraulic fluid and communicating with the pressurizable seal;

a piston in the valve plug operatively communicating with the reservoir for applying pressure to the hydraulic fluid in the reservoir for pressurizing the seal;

a handle for turning the valve plug from the open position to the closed position;

means for rotatably coupling and uncoupling the handle with or from the valve plug, the handle being coupled with the valve plug when the valve is open, the handle being uncoupled from the valve plug when the valve is closed, the coupling means including,

a cam on the valve body, a locking pin, a cam follower on the locking pin, a passage in the handle for receiving the locking pin, a recess in the valve plug for engaging the locking pin, and means for urging the cam follower against the cam, whereby engagement of the cam follower with the cam causes the locking pin to selectively engage or disengage the recess in the valve plug, so that when the locking pin engages the recess, the handle is rotatably coupled with the valve plug, and when the locking pin is withdrawn from the recess and disengages the recess, the handle is rotatably uncoupled from the valve plug, and

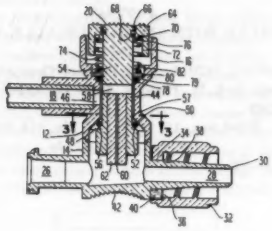
actuating means for actuating the piston upon the rotation of the handle when the handle is rotatably uncoupled from the valve plug for pressurizing the seal.

4,497,468

CATHETER PATENCY FLUSH FLOW CONTROLLER

James R. Hubbard, Moorestown, N.J.; Joseph Pelensky, Philadelphia, Pa., and Niles Kin, Clarence, N.Y., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,656
Int. Cl.³ F16K *47/04*
U.S. Cl. 251—117 **16 Claims**



1. A catheter patency flow-flush controller adapted for connection to an in-dwelling vascular catheter and for selective delivery thereto of a patency-maintaining fluid at one of two pre-selected rates, said controller including:

(a) a housing having at least one passage therethrough, said housing also having two openings, linearly displaced from one another along a valve actuation line, said openings communicating with said passage and comprising an inlet and an outlet for said passage;

(b) a valve seat defined in said passage between said openings;

(c) a valve member mounted in said passage and movable along said valve actuation line;

(d) means for biasing a valve element of said valve member into valve-closing contact with said valve seat;

(e) internal valve passage extending through said valve member for providing a continuous low flow rate, liquid flow path through said valve member from said inlet to said outlet of said housing;

(f) push button means for selectively moving said valve member out of contact with said valve seat to provide a high rate liquid flow path around said valve member from said inlet to said outlet;

said controller characterized by

(g) said biasing means consisting of a coil spring axially aligned with said valve actuation line and retained under compression between (i) a first abutment formed in a portion of said housing surrounding said valve member, said first abutment including a resilient sealing means held under compression by said spring and adapted to prevent leakage around said valve member at said first abutment, and (ii) a second abutment, facing said first abutment, and associated with said valve member;

(h) said valve member further including a cap member with a downwardly dependent skirt mating with and secured to said valve member, said cap member forming said second abutment and said dependent skirt surrounding at least part of said coil spring, said cap member and valve member together forming said push button means,

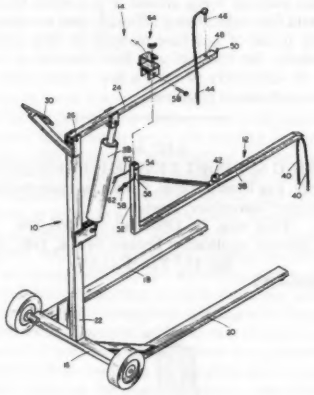
(i) said housing further including an upwardly dependent open skirt oppositely disposed with respect to said dependent skirt of said cap, said housing skirt also surrounding at least part of said coil spring, said housing skirt and said cap dependent skirt fitting within one another in mating portions thereof and being slidably movable relative to one another along said valve actuation line within said mating portion, wherein said valve member is cylindrical, and said first abutment resilient sealing means is an O-ring compressively retained against said valve member and against a portion of said first abutment by said coil spring, said cap and second abutment including a circumferential spacer surrounding said valve member, one end of said coil spring fitting around said circumferential spacer, said controller further including, interposed between the end of said coil spring and said first housing abutment O-ring, a washer having a planar element surrounding said valve member and positioned and adapted to transmit compressive force from said spring to said O-ring, said washer also having a cylindrical element perpendicularly disposed with respect to said planar element, said cylindrical element slidably engaging said valve member, said spring end fitting around said cylindrical element.

4,497,469

VAN ENGINE REMOVAL ASSEMBLY

Richard W. Barnhouse, 14024 Blair High Rd., Omaha, Nebr. 68134

Filed Mar. 18, 1983, Ser. No. 476,798
Int. Cl.³ B60P *1/48*
U.S. Cl. 254—8 B **3 Claims**



1. In combination,

a floor hoist comprising a wheeled frame means and having at least one floor engaging stabilizer arm extending therefrom, an upstanding post means, an elongated support arm, having first and secondary ends, pivotally secured at its first end, about a horizontal axis, to said post means adjacent the upper end thereof and extending therefrom above said stabilizer arm, and means for selectively pivotally moving said support arm upwardly and downwardly relative to said post means,

and a van engine removal assembly secured to said support arm,

said assembly comprising a first frame member having upper and lower ends and being secured at its upper end to said support arm between the ends thereof, and an elongated second frame member extending from the lower end of said first frame member beyond the second end of said support arm, said second frame member having an outer end positioned outwardly of said second end of said support arm, said second frame member being positioned below said support arm and generally parallel thereto,

support means extending from said support arm, adjacent its second end, to said second frame member intermediate the length thereof,

means on the outer end of said second frame member for attachment to the van engine,

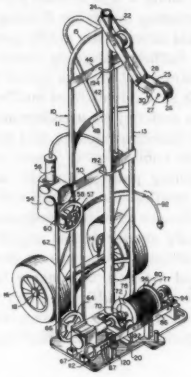
and a swivel means connecting the upper end of said first frame member to said support arm.

4,497,470

POWERED CART MOUNTED CABLE PULLER

William M. Carter, Rt. #1, Box 74-D-5, Daytona Beach, Fla. 32014, and John M. Rodgers, 1722 "B" Avenue, Ormond Beach, Fla. 32074

Filed Apr. 12, 1982, Ser. No. 367,180
Int. Cl.³ E21C *29/16*
U.S. Cl. 254—134.3 FT **3 Claims**



1. In a device for pulling electrical cable through conduit the combination comprising:

a first rigid frame means having a plurality of support members;

wheel means connected for rotation to said frame means to enable the frame means to be easily rolled from place to place in a wheelbarrow like fashion;

power means rigidly and removably connected to said frame means; the power means having a rotatable output shaft;

a torque multiplying, speed reducing means having a shaft for being driven by said output means and having an output shaft;

a shiftable clutch means for receiving power from said torque multiplying speed reducing means;

a reel member having sides mounted for rotation on a shaft means and said shaft means driven by the output side of said shiftable clutch means, said reel member adapted to accept a length of cable;

a guide and support means fixedly connected to said frame means for holding said frame in a fixed position away from the conduit and for guiding the cable to be fed to reel member to said reel member;

shiftable clutch means including first and second clutch face members having mutually engaging surfaces and a resilient member biasing said clutch members in a clutch engaging direction;

a plurality of roller members mounted on a shift rod for engaging the sides of said reel member for causing the engagement and disengagement of said clutch means.

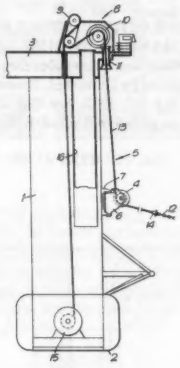
4,497,471

ASSEMBLY ON A CHAIN SHEAVE/CHAIN-ROPE SYSTEM

Leif Longberg, Landas, and Hakon S. Pedersen, Hop, both of Norway, assignors to A/S Bergens Mekaniske Verksteder, Bergen, Norway

Filed Jul. 25, 1983, Ser. No. 517,502
Claims priority, application Norway, Aug. 3, 1982, 822658
Int. Cl.³ B63B *21/14*; B66D *1/30*
U.S. Cl. 254—372 **5 Claims**

2. An assembly on a chain sheave/chain-rope system wherein an end of a chain is connected to an end of a rope in a splice member adapted to travel over a chain sheave by lying within a recess or pocket of the sheave, the splice member comprising a sleeve socket for receiving the rope end and a half-link of chain, from which the end link of the chain is suspended, characterized by guide members on the splice member which cooperate with guide members in a hawsehole preceding the chain sheave, by means of which the end link of the chain is brought into the correct position for engagement prior to entering the chain sheave, the guide member being arranged within the hawsehole for cooperation with guide members disposed on the splice member, such that the end link of the chain, which hangs from the chain half-link disposed on the splice member, is brought into the correct position for engagement prior to the chain's entry onto the chain sheave, said guide members being in the form of two diametrically opposed grooves extending along the interior walls of the hawsehole in the direction of cable passage, with guide ramps leading up to the respective guide grooves.

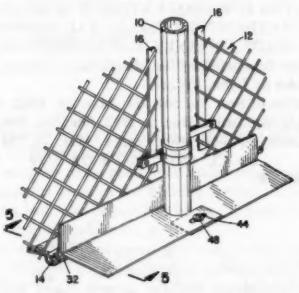


4,497,472

VEGETATION BLOCKING FENCE EDGING ASSEMBLY

J. Darrel Johnson, 16289 Bardbury, Middleburg Heights, Ohio 44130

Filed Nov. 15, 1982, Ser. No. 441,685
Int. Cl.³ E04H *17/06*
U.S. Cl. 256—32 **16 Claims**



1. A one piece extruded plastic edging strip for blocking vegetation growth along fences, the edging strip comprising:

a generally J-shaped, longitudinally extending lower fence edge engaging portion which is substantially J-shaped in transverse cross section, the J-shaped fence engaging portion including a generally U-shaped channel for receiving a lower edge of the fence and a single guide strip extending from a first edge of the U-shaped channel for engaging a first face of the fence, whereby the generally

J-shaped portion is adapted to be slid under the fence lower edge until the guide strip engages the fence first face; and,

a longitudinally extending vegetation shield portion including first and second flanges extending transversely from opposite sides of the J-shaped portion and terminating in substantially linear longitudinally extending first and second flange edges, respectively.

4,497,473

COMPOSITE REFRACTORY ARTICLES AND METHOD OF MANUFACTURING THEM

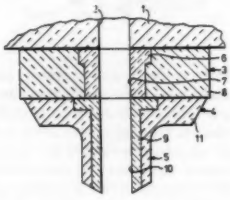
Pierre Robyn, Nivelles, and Pierre Deschepper, Charleroi, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Sep. 17, 1982, Ser. No. 420,505

Claims priority, application United Kingdom, Nov. 5, 1981, 8133409

Int. Cl.³ B22D *41/08*

U.S. Cl. 266—44 **34 Claims**



1. A method for manufacturing a composite refractory article having a flow passage through which a molten metal stream may be conducted, said article comprising a first body of a relatively high grade refractory material which defines an axially extending surface of that passage, said first body being fused to a second body of relatively lower grade refractory material; comprising the steps of producing said second body defining a passageway of greater cross-sectional dimensions than said flow passage and providing within said passageway said first body of refractory material for defining said flow passage surface, said first body being formed in a sliding gate valve plate and being formed in the larger passageway by causing its refractory material to cohere and bond to said second body by fusion or partial fusion in situ.

4,497,474

APPARATUS FOR SEQUENTIALLY ANNEALING AND THEN HARDENING LONG METAL COMPONENTS MADE OF FINE OR SPECIAL STEEL

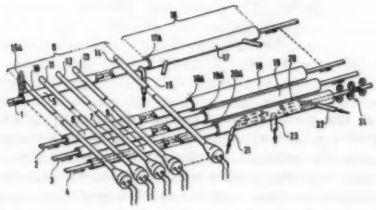
Jean-Claude Bourget, Issy les Moulineaux, France, assignor to Les Cables de Lyon, France

Continuation of Ser. No. 362,324, Mar. 26, 1982, abandoned. This application Dec. 9, 1983, Ser. No. 559,839

Claims priority, application France, Mar. 31, 1981, 81 06443

Int. Cl.³ C21B *9/62*; F27B *5/14*

U.S. Cl. 266—81 **3 Claims**



1. Apparatus for sequentially annealing and quenching armoured electric components, said components including at least a conductor core, a coating of mineral insulant and an outer sheath of fine or special steel with an austenitic structure, said apparatus comprising:

unitary longitudinal mufflers bearing respectively said components,

at least one annealing furnace along an upstream portion of said unitary muffles including means for containing a reducing or neutral atmosphere therein, and

quenching means along a downstream portion of said unitary muffles including means for flowing a cooling fluid through each said downstream muffle portion in a circuit,

the improvement further comprising means for controlling the inlet temperature and the flow rate of the cooling fluid flowing through each downstream muffle portion, so that the components undergo no trnasformation of their austenitic structure during quenching, and means for subjecting each electric component to direct contact with the cooling fluid during passage through said downstream portion of said muffles, and wherein said apparatus consists of a single furnace about said upstream muffle portion for simultaneously annealing said sheath and said core during passage through said upstream portion of each of said muffles, and wherein said single furnace includes resistors exterior of said muffles to effect a high degree of homogenity in heating and to insure simultaneous anneaing of the conductor core and said outer sheath.

4,497,475

NOZZLE ASSEMBLY FOR A METALLURGICAL FURNACE

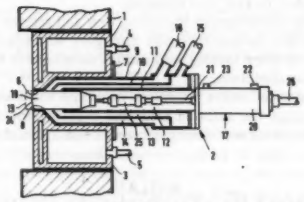
Gerhard Fuchs, Kehl-Bodersweier, and Ernst Wabersich, Kehl-Marlen, both of Fed. Rep. of Germany, assignors to Korf & Fuchs Systemtechnik GmbH, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,510

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301466

Int. Cl.³ C21B *7/16*

U.S. Cl. 266—270 **13 Claims**

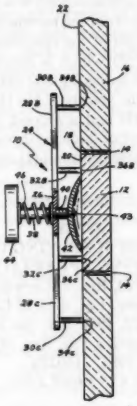


1. A nozzle assembly for use in a metallurgical furnace above the level of the molten bath therein, comprising a duct having a discharge opening, a member which is disposed displaceably in the region of said discharge opening and which is displaceable into a position of closing said discharge opening, an actuating means for displacing said member into said closure position, and oscillation generating means operable to cause oscillation of at least a part of said displaceable member which is operative to close said discharge opening in the closure position of said displaceable member.

4,497,476
DEVICE FOR POSITIONING A PLUG FOR REPAIRING PANES OF GLASS

Robert W. Wiele, Prior Lake, Minn., assignor to Novus Inc., Minneapolis, Minn.

Filed Mar. 4, 1983, Ser. No. 472,043
Int. Cl.³ B25B *3/00*
U.S. Cl. 269—1 **8 Claims**



1. A device for supporting a plug in an opening while repairing a break in a rigid plate, comprising:

a frame;

a first set of legs extending away from said frame in a first direction, the legs of the first set circumscribing a first area of the frame and providing a plurality of support surfaces at spaced locations around the circumscribed first area;

a second set of legs mounted on and extending away from the frame in generally the same direction as the first set of legs and circumscribing a second area smaller than and within the first area and providing a plurality of second support surfaces at spaced locations around the circumscribed second area;

each leg of the first and second sets having a distal end, spaced outwardly from the frame, the first and second support surfaces being at the distal ends of the legs and the support surfaces of the legs of the first and second sets all lying on a common plane;

support means for supporting a plug generally smaller than the area circumscribed by the first set of legs against the support surfaces of the second set of legs, the plug being for use in plugging an opening in a rigid plate; and

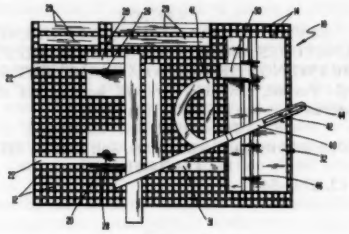
said device being positionable against said rigid plate with the support surfaces of the first set of legs contacting one surface of a rigid plate to be repaired outwardly of an opening in such plate and with a supported plug within the opening so that a surface of such plug is held coplanar with said one surface of such rigid plate.

4,497,477
APPARATUS FOR CUTTING GLASS INTO VARIOUS SHAPES

Donald Abel, Morton, Ill., assignor to Morton Glass Works, Morton, Ill.

Continuation-in-part of Ser. No. 201,718, Oct. 29, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,450
Int. Cl.³ B25B *1/08*
U.S. Cl. 269—303 **23 Claims**

1. A device for supporting a piece of glass while cutting same by scoring and subsequently breaking it along the score line comprising: a plurality of generally vertically oriented intersecting walls having upper and lower edges, the upper edges of the walls being coplanar so as to define a planar supporting surface for said glass piece and a generally horizontal base attached to the lower edge of each of the walls such that the walls and base form a plurality of upwardly opening pockets to catch and retain glass chips generated by the scoring and breaking process below the planar supporting surface;

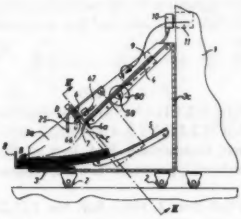


a variable angle cutting jig base having a plurality of projections projecting from its lower surface to engage said upwardly opening pockets; a cutting guide bar pivotally attached to said variable angle cutting jig base; and, an adjustable stop block slidably retained on said variable angle cutting jig base so as to act as a lateral stop for the glass piece.

4,497,478
APPARATUS FOR SQUARING, STAPLING, AND STACKING COPY SETS

Rudolf Reschenhofer; Ludwig Müllritter, both of Munich; Günther Schnall, Eching, and Franz Fruth, Germering, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,578
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1982, 3234746
Int. Cl.³ B42B *1/02*
U.S. Cl. 270—53 **20 Claims**



1. In combination with a copier that produces a succession of sheet copies, an apparatus comprising:

a housing adapted to be positioned adjacent the copier;

an upper support plate in the housing positioned to receive the copies from the copier and having a downstream end remote from the copier;

a stop flap at the downstream end and pivotal between a position blocking copies from sliding down off the downstream end and a freeing position permitting copies to slide down off the downstream end;

a downwardly inclined lower support plate in the housing below the downstream end of the upper plate and positioned to receive copies sliding in the freeing position of the stop flap off the downstream end of the upper plate;

means including a stapler fixed in the housing adjacent the upper plate upstream of the downstream end thereof;

actuating means connected to the stapler for closing same on a stack of copies on the upper plate for stapling same together; and

control means connected to the stop flap and the stapler actuating means for periodically stapling the copies on the upper plate together and thereafter pivoting the stop into the freeing position to slide the stapled-together copies onto the lower plate.

4,497,479

DEVICE FOR SYMMETRICALLY OPENING SIGNATURES MADE UP OF SEVERAL SHEETS AND ARRANGING THEM ONTO A TRANSPORT SADDLE

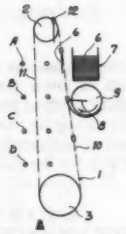
Giorgio Pessina, and Aldo Perobelli, both of Via Arborina 2, Paderno Dugnano (Milano), Italy (20037)

Filed Jul. 6, 1982, Ser. No. 395,282

Claims priority, application Italy, Jul. 3, 1981, 22749 A/81

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **2 Claims**



1. A device for symmetrically opening signatures made up of several sheets and arranging them onto a transport saddle, the device including a signature feeder provided with signature holding or gripping means, as well as signature opening means of the suction cup or vacuum-operated type, characterized in that said signature feeder comprises a signature opening length or section arranged to extend in a substantially vertical direction, with said length or section of the signature feeder there being associated, on either sides thereof and in a symmetrical fashion, a plurality of signature opening means, and characterized in that said signature feeder comprises two parallel chains provided with link studs adapted for supporting, or gripping the signatures.

4,497,480

EJECTOR MECHANISM FOR INCOMPLETE FASCICLES IN A CONVEYOR LINE

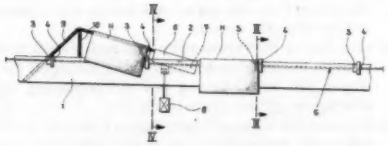
Edgar Nothdurft, Grosserlach, Fed. Rep. of Germany, assignor to Maschinenbau Oppenweiler GmbH, Oppenwiler, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,234

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318047

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—58 **10 Claims**



1. An ejector for incomplete fascicles which, in a straddle arrangement on a transport rail, are carried along by driver means moving in the lengthwise direction of said transport rail, characterized by

(a) a guide rail (**9**) which starts at a distance from the transport rail (**1**) that is greater than the thickness of the complete fascicles and extends upward and to the side from this starting end at an acute angle to the direction of movement of the fascicles moving along the transport rail (**1**) up to a highest point whose position with respect to the transport rail (**1**) is selected such that the incomplete fascicles (H) leave the active region of the driver means (**3**) only after the center of gravity of the fascicle has moved past the highest point of the guide rail (**9**), said guide rail having a down-slope toward its end which is sufficient for transport of the incomplete fascicles past this end under the weight of the fascicles themselves, and

(b) a switch tongue (**6**) which is movable between a first position in which it forms a guide path for the incomplete fascicles (**5**) from the transport rail (**1**) to the starting end of the guide rail (**9**) and a second position in which it permits the transport of fascicles through the intermediate space between the transport rail (**1**) and the starting end of the guide rail (**9**).

4,497,481

ARRANGEMENT FOR SUPPLYING ORIGINALS FOR COPYING APPARATUS

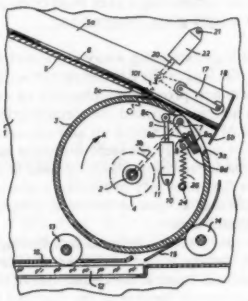
Guenter Wetzel, Haar, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,962

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150223; Dec. 18, 1981, 3150224

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—3.1 **8 Claims**



1. An arrangement for supplying originals for a copying apparatus, comprising

a supply stack arranged above an illumination location of a copying apparatus and having a stack supporting surface, and a front stack abutment, said originals being placed in said stack so that their sides to be illuminated face upwardly;

separating means arranged to remove an original from a lower side of said stack;

guiding means forming a transport path for guiding the original from said stack supporting surface of said stack to the illumination location;

transporting means arranged to turn the original removed from said stack and supply the original to the illumination location with its side to be illuminated downwardly, said transporting means including a rotatable transport cylinder connected with said transport path, said transport cylinder having a periphery and a through opening formed in said periphery, said stack supporting surface having near said transport cylinder an end section forming a tangent with the periphery of said transport cylinder and provided with an opening, said stack supporting surface contacting said transport cylinder in a contact point, said separating means being mounted on said transport cylinder in the region of said through opening and including a

pivotable suction nozzle member, said opening of the stack supporting surface extending substantially from said contact point to said front stack abutment and allowing pivoting of said suction nozzle member to a free lower side of said stack in the region of said opening of the stack supporting surface;

said suction nozzle member including a plurality of suction nozzles and being pivotable relative to said transport cylinder from a position inside said transport cylinder through said through opening of the transport cylinder to a position outside said transport cylinder towards the opening of the stack supporting surface to separate a lowermost original from the stack and back from the position outside the transport cylinder through said through opening in the periphery of the transport cylinder to the position inside thereof;

a suction conduit with a valve operatively communicating suction conduit with said suction nozzles of said suction nozzle member; and

control means arranged to switch off said transport cylinder in a position in which said suction nozzle member is to be pivoted towards said opening of said stack supporting surface, to pivot said suction nozzle member to the lower side of said stack after said transport cylinder has been switched off, to actuate said valve for communication said suction nozzles of said suction nozzle member with said suction conduit, to again switch on said transporting cylinder, and to pivot said suction nozzle member back inside said transport cylinder so that said transport cylinder is rotated together with said suction nozzle member to transport the lowermost original towards said illumination location.

4,497,482

FEEDING STACKS OF SHEETS

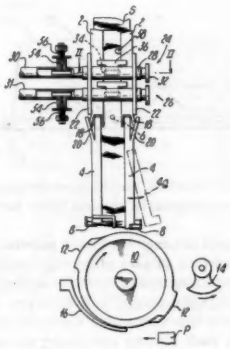
Victor J. Furze, and Thomas J. Howlett, both of London, England, assignors to Molins PLC, London, England

Filed Jul. 30, 1982, Ser. No. 403,908

Claims priority, application United Kingdom, Aug. 4, 1981, 8123774

Int. Cl.³ B65H *3/12*

U.S. Cl. 271—94 **6 Claims**



1. Apparatus for feeding a stack of sheets, such as stamps for cigarette packets, comprising:

(a) a substantially vertically disposed guide means, having top and bottom ends, for defining a stack of superposed sheets, the cross-sectional dimensions of said guide means being greater than that of said sheets and said bottom end of said guide means comprising stack support means;

(b) suction withdrawal means for withdrawing sheets singly at a predetermined rate from said bottom end of said guide means;

(c) upper and lower gripping means disposed intermediate said top and bottom ends of said guide means and spaced from said bottom end and from each other, said upper and lower gripping means being operable to project into said guide means for gripping solely against the side edges of said sheets in said stack; and

(d) actuating means operable at a rate slower than said predetermined rate of said withdrawal means to alternately operate said upper and lower gripping means such that, while sheets are withdrawn from said bottom end of said guide means by said withdrawal means and the part of said stack below said gripping means is lowered, the part of said stack above said gripping means is supported alternately by said upper and lower gripping means to lower said part of said stack above said gripping means at intervals corresponding to the operating rate of said actuating means;

(e) whereby said stack of sheets are fed downwardly in a controlled manner towards said bottom end of said guide means without the full weight of said stack being transmitted to said stack support means at said bottom end of said guide means and with the weight of said stack on said stack support means remaining substantially constant.

4,497,483

DEVICE FOR DIVIDING ICE-HOCKEY RINKS

Göran Ahlgren, Pl 1421, S-790 30 Insjön, Sweden

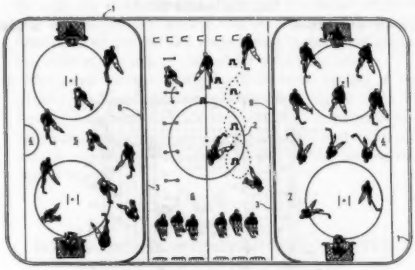
PCT No. PCT/SE82/00340, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01390, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 21, 1982, Ser. No. 514,829

Claims priority, application Sweden, Oct. 21, 1981, 8106215; Mar. 18, 1982, 8201730

Int. Cl.³ A63C *19/06*; E04H *17/16*

U.S. Cl. 272—3 **9 Claims**



1. A device in combination with an ice-hockey rink for dividing the rink into at least two smaller rink parts, characterized in that it comprises a plurality of straight sideboard elements (**8***a*) and a plurality of curved sideboard elements (**8***b*), and in that the sideboard elements (**8***a*, **8***b*) are provided with means (**16**, **20**, **21**) for interconnection thereof so as to form a supplemental sideboard (**8**, **9**) which, when placed across the ice-hockey rink, together with the stationary sideboard (**1**) of the rink encloses a smaller rink (**5**, **7**) having symmetrically curved corners.

4,497,484

PLAYGROUND CLIMBER

Donald E. West, Fort Payne, Ala., assignor to Game Time, Inc., Fort Payne, Ala.

Filed Feb. 25, 1983, Ser. No. 469,805

Int. Cl.³ A63B *17/04*

U.S. Cl. 272—113 **16 Claims**

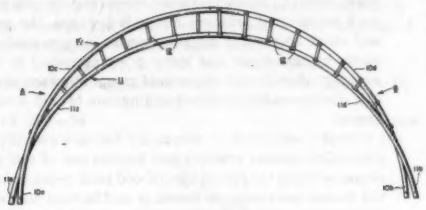
1. A children's climbing apparatus suitable for use in parks and playgrounds comprising:

a first arcuate rail member having a pair of first member end portions supportable by the ground,

a second arcuate rail member having a pair of second member end portions supportable by the ground,

said first and second arcuate rail members lying generally in intersecting planes,

said first and second arcuate rail members being positioned relative to each other and to a vertical plane having first



and second sides such that one said first member end portion is positioned on said first side and the other said first member end portion is positioned on said second side and the one said second member end portion closest to said one said first member end portion is positioned on said second side and the other said second member end portion is positioned on said first side, and

a plurality of children's climbing rungs interconnecting said first and second rail members.

4,497,485

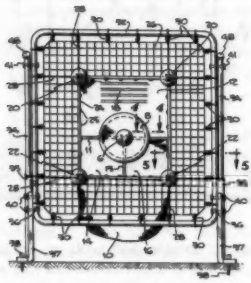
BASEBALL PITCHING TARGET

Robert L. Macosko, 9701 Nila Ave., Chatsworth, Calif. 91311

Filed Jun. 4, 1984, Ser. No. 616,838

Int. Cl.³ A63B *69/40*

U.S. Cl. 273—26 A **4 Claims**



1. A baseball pitching target for receiving pitched baseballs, comprising in combination:

a peripheral main frame of generally rectangular configuration having rounded corners;

a generally rectangular portion of mesh netting within the periphery of said main frame;

net and bag retaining springs attaching said mesh netting to said peripheral main frame;

a front support member attached to said peripheral main frame and to the ground;

two adjustable telescoping brace members, each attached to the ground and to one side of the upper portions of said main frame;

a rectangular insert region or strike zone attached to said mesh netting and approximately centrally located within said generally rectangular portion of said mesh netting, including:

large cords cooperating with said net and bag retaining springs and said mesh netting to position said strike zone;

two shoulder target discs located at the two upper corners of said rectangular insert region or strike zone;

two catcher's knee protector target discs located at the two lower corners of said rectangular insert region or strike zone;

simulated catcher's chest protector ribs located at the upper central portion of said rectangular insert region or strike zone;

a compartmentalized ball receiving bag having a mouth attached to said rectangular insert region or strike zone;

said compartmentalized ball receiving bag being separated into three chambers;

an upper chamber of said compartmentalized ball receiving bag;

a lower compartment of said compartmentalized ball receiving bag;

a bag center wall dividing said upper chamber from said lower compartment;

a lower left-hand chamber of said lower compartment;

a lower right-hand chamber of said lower compartment;

a bag divider wall dividing said lower left-hand chamber from said lower right-hand chamber;

reinforcing large cords defining each of said upper chamber, said lower compartment, said lower left-hand chamber and said lower right-hand chamber;

a juncture of said reinforcing large cords at said bag center wall with said bag divider wall; and

a simulated catcher's mitt, centrally located beneath said simulated catcher's chest protector ribs and secured to said juncture of said reinforcing large cords at said bag center wall with said bag divider wall.

4,497,486

DEVICE FOR SELECTING NUMBERS RANDOMLY

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06612

Filed Aug. 3, 1984, Ser. No. 637,596

Int. Cl.³ A63F *7/04*

U.S. Cl. 273—144 B **4 Claims**

1. A device for selecting numbers comprising:

a horizontal rectangularly shaped plate having a flat top surface;

a first plurality of like members, each member being secured to the top surface of said plate and extending upwards, each member being hemispherically shaped, said members being equidistantly shaped and arranged into rows and columns, each row containing the same second plurality of members, each column containing the same third plurality of members, said first plurality being equal to the product of said second and third pluralities, each two adjacent members in any row together with the corresponding two adjacent members in an immediately adjacent row defining a cell, each cell having a centrally disposed region exposing an underlying portion of said plate, each region having a different number associated therewith;

at least one spherical ball adapted to rest removably in any region; and

a transparent cover secured peripherally to said plate and extending over said members, the separation between the

top of said members and the inner surface of said cover being larger than the diameter of said ball.

4,497,487

CHANCE DEVICE

Henry O. Crippen, 1700 Grand Concourse, Bronx, N.Y. 10457

Continuation-in-part of Ser. No. 137,725, Apr. 7, 1980, abandoned. This application Aug. 28, 1980, Ser. No. 182,234

Int. Cl.³ A63F 9/04

U.S. Cl. 273—146 **2 Claims**

1. A game device comprising a chance device having two icosahedral chance elements having a number on each of the surfaces thereof, one chance element having numbers thereon representing ten odd numbers and ten even numbers of from 1 to 40, and the other chance element having numbers thereon representing the remaining twenty numbers of from 1 to 40, the sum of the numbers appearing on each chance element being 410 and one of the chance elements has a second number from 0 to 9 on each face with the same number appearing on directly opposite faces of the icosahedral element.

4,497,488

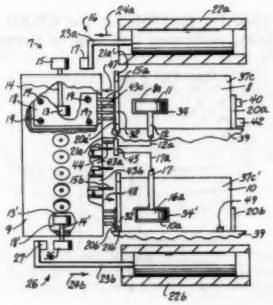
COMPUTERIZED CARD SHUFFLING MACHINE

Jerome B. Plevyak, 200 N. Faklanding Rd., Maple Shade, N.J. 08052, and Adolph E. Nicoletti, 8 Villano Ct., Berlin, N.J. 08009

Filed Nov. 1, 1982, Ser. No. 438,408

Int. Cl.³ A63F 1/12

U.S. Cl. 273—149 R **37 Claims**



1. A computerized card shuffling device comprising in combination: a card holding and feeding means for holding a stack of cards and for feeding cards intermittently therefrom and thereto; a card transfer means including a plurality of card-receiving stations; and shifting means for intermittently randomly matching non-random sequences of said plurality of stations with said card holding and feeding means, the arrangement being such that when matched a card is feedable from the card holding and feeding means into a matched one of said plurality or alternately is feedable from a matched one of said plurality into said card holding and feeding means.

4,497,489

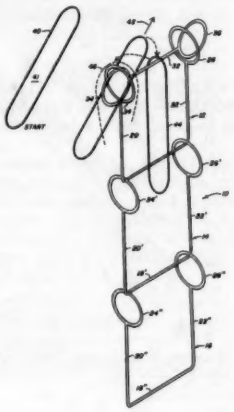
BOW AND LADDER AMUSEMENT DEVICE

Wilmer O. Pelletier, Portsmouth, N.H., assignor to Bernice Pelletier, Portsmouth, N.H.

Filed Aug. 11, 1982, Ser. No. 407,251

Int. Cl.³ A63F 9/08

U.S. Cl. 273—158 **9 Claims**



1. An amusement device comprising in combination:

a ladder structure having rungs and links in the form of rings having a predetermined diameter, said rungs and links being permanently and rigidly attached, with said links surrounding all but the bottom rung, and a barbell member through the links adjacent the top of the ladder structure, said barbell member having rings at either end thereof, the diameters of the barbell rings being larger than those of the links at the top of the ladder structure; and

an elongated earless noncollapsible bow having a completely enclosed unobstructed center region, said bow having maximum width which permits the passage of the bow completely through any of said links and a maximum length essentially that of the length of the unobstructed center region.

4,497,490

BOARD GAME AFFORDING COMPETITIVE CHALLENGE AMONG PLAYERS

Thurmond J. Rogers, Jr., 12011 Woolford Dr., Houston, Tex. 77065

Filed Apr. 27, 1979, Ser. No. 33,941

Int. Cl.³ A63F 3/00

U.S. Cl. 273—249 **14 Claims**

1. A board game apparatus comprising

a playing board including

a plurality of marked spaces interconnected in a first path of progression around said board,

a plurality of marked spaces interconnected in a second path of progression forming a closed loop with said first path at spaced intervals therealong,

playing pieces for movement by each player along said first or second paths of progression according to the rules of the game,

means associated with selected ones of said marked spaces to indicate monetary value for purposes of gain to the player whose playing piece occupies such space,

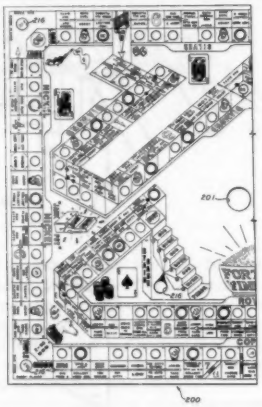
means associated with selected other ones of said marked spaces to indicate monetary value for purposes of loss to the player whose playing piece occupies such space,

said means for indicating monetary value on each of said marked spaces comprising means removably secured

adjacent to said first named and said second named selected marked spaces for varying the value indicated for any selected marked space,

indicia means on said playing spaces directing a player to pay or collect from other players or the cashier or to take specified competitive action,

chance means for directing movement of said playing pieces



and having indicia corresponding to the numbers or faces of playing cards, and

a plurality of cards having indicia of complete playing hands of five cards each ranked according to the game of poker and used by the players competitively to challenge or be challenged by other players when one player's playing piece occupies a selected playing space directing competitive action.

4,497,491

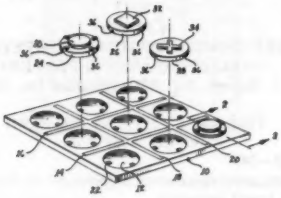
APPARATUS AND METHOD EMPLOYING SELECTIVELY STACKABLE GAME PIECES

Paul D. Holman, 919 E. Kaler Dr., Phoenix, Ariz. 85020

Filed Dec. 19, 1983, Ser. No. 563,237

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—271 **25 Claims**



1. A game of skill, said game comprising in combination:

(a) a game board;

(b) a plurality of positions delineated on said game board;

(c) at least two sets of game pieces for use with said game board, each said set of game pieces including:

i. a first plurality of game pieces having a first valuation;

ii. a second plurality of game pieces having a second valuation, which second valuation is superior to the first valuation;

iii. a third plurality of game pieces having a third valuation, which third valuation is superior to the second valuation and inferior to the first valuation; and

(d) means for stacking said game pieces only in ascending order of valuation upon selected ones of said positions of said game board.

4,497,492

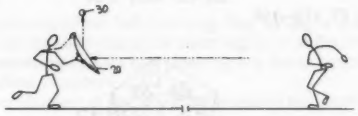
GAME WITH SHIELDS FOR DEFLECTING HURLED PROJECTILE

R. Danford Lehman, Jr., 6944 Park Ave., and Michael F. Williams, 6903 Park Ave., both of McLean, Va. 22101

Filed Nov. 12, 1982, Ser. No. 440,991

Int. Cl.³ A63B *71/00*

U.S. Cl. 273—411 **19 Claims**



1. A game for a plurality of players comprising:

a plurality of shield members, one for each player, each shield member including rebound means for providing substantial and controllable generally upward rebound of airborne objects under the control of a player, said rebound means including a concave rebound surface and handle means arranged to permit a player to movably support the shield member in one hand with said concave rebound surface facing away from that player, said rebound surface having a sufficiently moderate degree of concavity to permit said substantial and controllable rebound; and

projectile means:responsive to being forcefully impacted against said concave rebound surface of a shield member for resiliently bouncing from that rebound surface;

whereby the object of the game is for one player to hurl said projectile toward another player and for said another player to rebound the projectile with the concave rebound surface of one of said shield members and catch the rebounded projectile before it lands.

4,497,493

MECHANICAL FACE SEALS WITH WEAR MONITOR MEANS

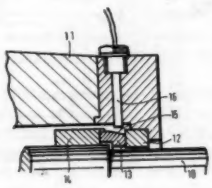
Surinderpal S. Sall, Slough, and John Kemp, Franham Common, both of England, assignors to Crane Packing Limited, Slough, England

Filed Jul. 11, 1984, Ser. No. 629,813

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 8319550

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—2 **13 Claims**

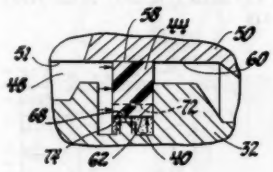


1. A method of monitoring the wear of the sealing faces of a mechanical face seal having an axially fixed seat and an axially movable seal face member which is urged into sealing engagement with said seat; comprising positioning a sensor radially of said seal face member or a component which moves axially with the seal face member, such that it may detect a signal from a radially opposed surface of the seal face member or component, said surface of the seal face member or component being arranged to provide a change in signal as the seal face member moves axially with respect to the sensor, thereby indicating the wear limit or the amount of wear of the sealing faces.

4,497,494
PRESSURE ACTIVATED SEAL RING

Karl D. Allen, Canton, and Alan L. Brace, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1984, Ser. No. 598,421
Int. Cl.³ F16J 15/24, 15/46
U.S. Cl. 277—27 2 Claims

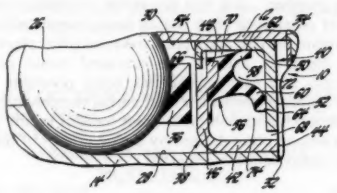


1. An improvement in pressure activated seal rings, having inner and outer cylindrical surfaces, for use on relatively moveable components, one of which has a bore the other of which has a shaft, with a seal groove disposed in one of said components, said seal being used in a hydraulic system wherein fluid pressure is applied to one radial face of the seal and to one of the cylindrical surfaces of said seal whereby said seal is urged radially against one of said components and axially against one sidewall of said groove wherein the improvement comprises: one of said cylindrical surfaces of said seal having formed therein a plurality of undulations to permit said fluid pressure to act on said one cylindrical surface when said seal is pressurized to thereby ensure radial movement of said seal ring to seal against one of said components.

4,497,495
UNITIZED WHEEL BEARING SEAL WITH MULTIPLE LIPS

Paul J. Christiansen, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1984, Ser. No. 586,343
Int. Cl.³ F16J 15/32, 15/48
U.S. Cl. 277—50 3 Claims

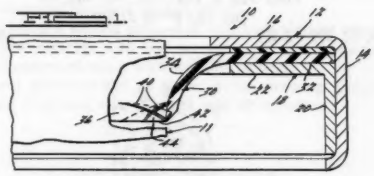


1. A unitized wheel bearing seal assembly comprising,
a unitary first sheet metal casing having a cylindrical wall adapted to be press fitted within a nonrotatable cylindrical bore,
a unitary second sheet metal casing having a cylindrical wall concentric with the first casing cylindrical wall and adapted to be press fitted within a rotatable cylindrical bore concentric with the stationary bore, said second casing having an axially outer side wall adapted to be exposed to ambient and extending radially outwardly from its cylindrical wall,
and a seal bonded to the first casing including first and second unsprung integral lips, the first lip extending into sealing engagement with the second casing cylindrical wall at an acute angle with respect thereto so as to be flexible radially outwardly away therefrom,
said second lip extending into sealing engagement with the axially outer side wall at an acute angle with respect thereto so as to be flexible axially inwardly away from said side wall,
said sealing lips further forming a lubricant cavity therebetween,
the angle and flexibility of the lips acting as one way gates to allow ingress of lubricant to the cavity and egress of lubricant from said cavity to ambient while resisting the ingress of contaminants from the ambient to the cavity.

4,497,496
HYDRODYNAMIC SLITTED SEAL AND METHOD OF MANUFACTURE THEREOF

James A. Repella, Berkley, Mich., assignor to Microdot Inc., Darien, Conn.

Continuation-in-part of Ser. No. 494,817, May 16, 1983, Pat. No. 4,451,050, which is a continuation-in-part of Ser. No. 322,640, Nov. 18, 1981, abandoned, and a continuation-in-part of Ser. No. 350,359, Feb. 19, 1982, Pat. No. 4,450,614. This application Apr. 23, 1984, Ser. No. 603,148
Int. Cl.³ F16J 15/32, 15/54; B23D 17/00; B21D 39/00
U.S. Cl. 277—134 12 Claims

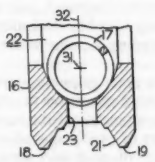


1. A bi-directional hydrodynamic oil seal comprising an annular case, and a thin washer-like seal element having a radially outer portion supported by said case and a generally cylindrical radially inner portion adapted to engage a shaft, the radially inner portion of said seal element having a plurality of generally arcuate slits in the surface thereof that extend at an acute angle relative to the central axis of the shaft and divergent from the oil side of said seal and intersect the radially inner edge of said seal element to effect hydrodynamic pumping in conjunction with a rotating shaft, said slits varying in depth from a maximum at the oil side of the radially inner portion thereof to a minimum at the dry side thereof.

4,497,497
OIL RING ASSEMBLY WITH ANNULAR EXPANDER SPRING

Jerome L. Berti, Chicago Heights, and Paul J. Patchen, Homewood, both of Ill., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Jun. 21, 1984, Ser. No. 623,010
Int. Cl.³ F16J 9/06, 9/22, 9/20
U.S. Cl. 277—163 7 Claims



1. An oil ring assembly for an internal combustion engine piston comprising:
an annular piston ring having a gap in the circumference

thereof for accommodating radial expansion and contraction of said ring and having a radially inward facing circumferential groove in the inner periphery of said ring,

wall means in said ring defining a plurality of circumferentially spaced slots extending radially between the bottom of said groove and an outer circumference of said ring,

an annular coiled expander spring disposed in said groove, the coils of said spring being of a predetermined outer radius,

the intersection of the surface of said groove by a radial plane defining a longitudinal end portion of an elongated ellipse whose major axis extends radially in relation to said ring, said predetermined outer radius of said spring coils and said ellipse being proportioned to provide radial space between the spring coils and the vertex of said end portion, the points of contact between the coils of said spring and said surface of said groove defining a pair of axially spaced annular bands spaced axially from axially opposite sides of said slots in said ring.

4,497,498

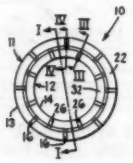
EXPANDING-CONTRACTING GRIPPING DEVICE FOR WORKPIECE

James R. Buck, 1902 SE. 36th St., Cape Coral, Fla. 33904

Filed Aug. 6, 1982, Ser. No. 405,793

Int. Cl.³ B23B *31/40*

U.S. Cl. 279—2 R **18 Claims**



1. A device for releasably gripping a workpiece, comprising:

inner and outer axially elongated, sleevelike gripping members, said inner gripping member being coaxially supported within said outer gripping member for axial movement relative thereto, said outer gripping member being radially resiliently expandable and said inner gripping member being radially resiliently contractable;

each said gripping member comprising an elongated and substantially cylindrical sleeve, the radially outer surface of said outer gripping member and the radially inner surface of said inner gripping member both being smooth cylindrical surfaces;

each said gripping member having a plurality of circumferentially spaced slits extending axially from at least one end thereof through an axial extent which is slightly less than the full length of the respective gripping member, said slits extending radially between the inner and outer surfaces of the respective gripping member for dividing each gripping member into a plurality of circumferentially spaced, axially elongated segments which are joined to adjacent segments by relatively short integral webs located at an end of the respective segment, said segments permitting the outer gripping member to resiliently radially expand and the inner gripping member to resiliently radially contract;

the segments of the outer gripping member having a plurality of axially spaced ramps on the radially inner surface thereof, and the segments of the inner gripping member having a plurality of axially spaced ramps on the radially outer surface thereof, each said ramp on said outer gripping member having a camming surface thereon which slidably engages a camming surface on a respective said ramp on said inner gripping member so that axial movement of one said gripping member relative to the other said gripping member in a first direction effects relative radial movement between the gripping members due to resilient deflection.

4,497,499

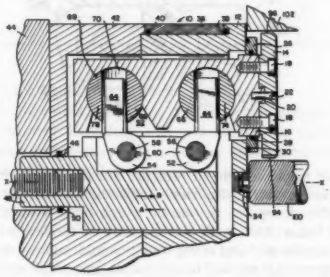
DOUBLE-CAM POWER CHUCK

Joseph S. Allen, Indianapolis, Ind., assignor to Stace-Allen Chuck, Inc., Indianapolis, Ind.

Filed Dec. 28, 1981, Ser. No. 334,633

Int. Cl.³ B23B *5/34, 5/22, 25/00, 31/12*

U.S. Cl. 279—119 **15 Claims**



1. A chuck, comprising a base

rotatable about an axis of rotation, an actuator axially disposed in the base for axial reciprocation relative thereto,

a plurality of first links, each first link including a distal member axially offset in a first direction and pivotally connected to the actuator, a like plurality of second links, each second link including a distal member axially offset opposite the first direction and pivotally connected to the actuator, the distal members of the first and second links extending substantially radially from the actuator,

a like plurality of jaw support members arranged circumferentially about the axis and movable radially relative thereto, each jaw support member receiving a first and a second link therein for relative motion therewith, and

eccentric means connecting the distal members of the first and second links to the jaw support members for translating axial motion of the actuator into radial motion of the jaw members, each first link being pivotable about a first pivot point such that, during axial reciprocation of the actuator, the first pivot point traverses a first plane defined by the pivot axes of the eccentric means connected thereto, and each second link being pivotable about a second pivot point such that, during reciprocation of the actuator, the second pivot point remains axially forward of a second plane defined by the pivot axes of the eccentric means connected thereto.

4,497,500

SPRING ACTION RIDE-ON TOY

Frank Mercurio, Wallingford, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.

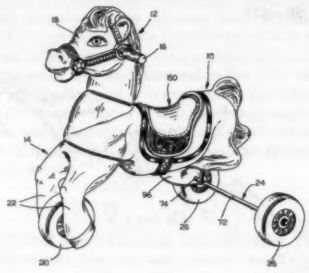
Filed Jul. 5, 1983, Ser. No. 510,961

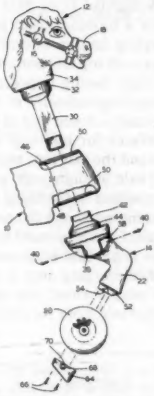
Int. Cl.³ A63G *19/00*

U.S. Cl. 280—1.13 **8 Claims**

1. A child's ride-on toy adapted for facile assembly, including a rigid body member of hollow construction comprised of upper and lower walls, each of said walls having a relatively large circular opening formed therethrough to define a pair of generally vertically aligned seat portions in the forward part of said body member; a head member mounted on said body member and extending downwardly through said opening in said upper wall; a leg member mounted on said body member and extending upwardly through said opening in said lower wall, said leg member having first ground-engaging wheel

means thereon; cylindrical bearing portions on both said head member and said leg member, said bearing portions being received within said seat portions of said top and bottom walls, respectively, for pivotable movement of said head and leg





members relative to said body member; means interengaging said head and leg members in assembly against relative rotation and axial displacement; and second ground-engaging wheels means on a rearward part of said body member.

4,497,501

PALLET TRUCK WITH HYDRAULIC LIFT

Tuval Kedem, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Oct. 26, 1981, Ser. No. 313,411
Int. Cl.³ B62D *21/18*
U.S. Cl. 280—43.12 **19 Claims**

1. In a hydraulic lifting unit having a base plate mounting an upright lift cylinder having therein a reciprocal combined lift rod and piston means and a pump cylinder having a pump outlet and a manually reciprocal pump piston projecting therefrom;

a hydraulic control mechanism secured to and depending from said base plate, said control mechanism having an elongated bore extending axially of and communicating with said lift cylinder;

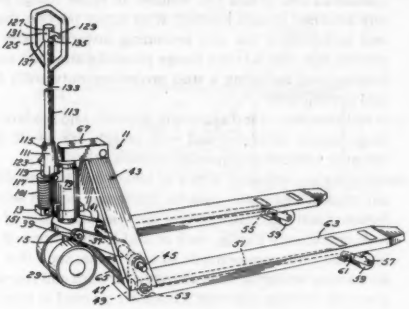
a plunger piston positioned within and projecting from said bore, through said base plate and at one end secured to said lift piston means;

there being a first passage in said base plate interconnecting said pump cylinder outlet and said bore;

a reservoir mounted upon said base plate containing hydraulic fluid and having a first outlet communicating with said first passage for directing hydraulic fluid into said pump cylinder upon its suction stroke;

first valve means adjacent said first passage blocking pressurized hydraulic fluid from said reservoir first outlet;

downward movement of said pump piston directing pressurized hydraulic fluid to said bore thereby lifting said plunger piston and said lift cylinder piston means and rod;



said reservoir having a second outlet;

there being a second passage in said base plate at one end communicating with said second outlet and at its other end communicating with said lift cylinder;

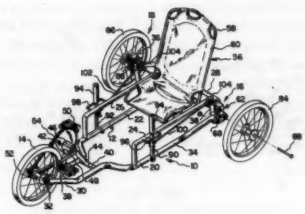
upward movement of its piston means drawing hydraulic fluid from said reservoir into said lift cylinder.

4,497,502

RECUMBENT TRICYCLE

Robert C. Forbes, Sun Valley, Calif., and John VanderKam, Dayton, Ohio, assignors to Huffy Corporation, Dayton, Ohio

Filed Jan. 31, 1983, Ser. No. 462,489
Int. Cl.³ B62D *9/02*
U.S. Cl. 280—281 LP **8 Claims**



1. A tricycle comprising:

a front wheel;

a frame having a passenger seat and including a pair of lower rails, each having an upwardly-inclined forward portion rotatably and nonsteerably mounting said front wheel, a divergent portion passing below and outwardly of said seat and terminating in an upwardly inclined section, a rear rail extending between said divergent portions and having an arcuate shape protruding rearwardly of said frame thereby providing a rear bumper therefor, and a pair of upper side rails, each extending upwardly from a different one of said lower side rails to said rear rail;

a pair of rear wheel assemblies mounted to said frame rearwardly of and on either side of said seat, each including a substantially vertically oriented rear wheel, hinge means attached to said rear rail at a top portion thereof and to one of said divergent portions of said lower rails at a bottom portion thereof and having a pivotal axis inclined 10° from the vertical inwardly toward said frame and

mounting said rear wheel for rotational movement about a horizontal axis and pivotal movement about said pivotal axis;

each of said hinge means including a housing attached to said rear rail and said lower rail, a rear wheel bracket pivotally mounted to said housing to rotate about said pivotal axis and including a vertical member rotatably mounting an associated one of said rear wheels, an upper flange pivotally attached to said housing at an upper portion thereof and including a link arm extending inwardly from said pivotal axis, and a lower flange pivotally attached to said housing and including a stud projecting outwardly from said pivotal axis;

a tie rod attached to and extending between said studs of said hinge means whereby said rear wheels are at all times oriented substantially parallel to each other;

steering means including a pair of levers mounted to different ones of said lower rails on either side of said seat for forward and rearward pivotal movement, a pair of link rods operatively joining each of said levers to one of said link arms on a common side of said frame, such that said levers may be displaced in alternate forward and rearward positions wherein said rear wheels are pivoted to turn said tricycle in a direction corresponding to said rearwardly pivoted lever; and

means for rotating said front wheel including crank means mounted to said frame forwardly of said seat and rearwardly of said rear wheel.

4,497,503

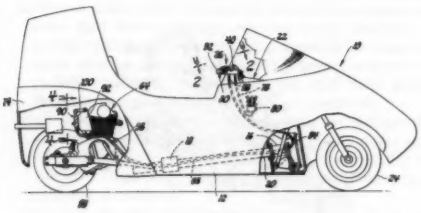
HYDRAULIC CONTROL SYSTEM FOR VEHICLE

Clarence C. Irwin, Dryden, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1983, Ser. No. 465,819

Int. Cl.³ B62K *11/14*

U.S. Cl. 280—335 **5 Claims**



1. In a wheeled vehicle, steering means in a first location having dirigible road wheel means at the lower end thereof for contacting a vehicle support surface and a manual steering device at the upper end thereof grippable by a vehicle driver for steering the vehicle, engine means in a second location drivingly connected to rear road wheels contacting said support surface, hydraulically operable control means associated with said engine for controlling the power output thereof, manual actuator means associated with said manual steering device for operating said engine control means and the power output of said engine characterized in that the manual actuator means comprises piston means movably mounted in a piston bore formed in a housing mounted to said steering device, said bore being hydraulically coupled to said engine control means by an incompressible fluid confined in a continuous flexible conduit extending in a long and tortuous path from said housing to said control means, said fluid being displaced upon movement of said piston means to control the power output of said engine.

4,497,504

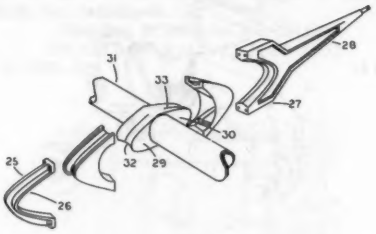
AXLE ALIGNMENT BUSHING

James M. Duff, 149 Kirk Rd., Sequim, Wash. 98382

Filed May 16, 1983, Ser. No. 494,651

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—673 **10 Claims**



1. A strut arm coupling bushing adapted to maintain optimum alignment of a vehicular front axle comprising a C-shaped body formed for a bushing insert between front and rear members of a coupling and an intermediary pair of opposed front and rear lugs with top and bottom surfaces projecting from the axle, the body having opposed first and second transverse walls tapering longitudinally in thickness from an open end to a point adjacent a closed end of said body, including inner and outer surfaces for meshing with the enclosed surfaces of the members and the axle lugs and to apply pressure therein to maintain said axle in alignment, and further including spaced side webs connected to C-shaped edges of the walls having a rim portion extending above the outer surfaces adjacent to the C-shaped edges for engagement with the outer sides of said members so as to retain said body securely within said members, the rim further merging into a thinner side web portion having a front edge formed into an arc of a circle adjacent to the open end of said body for contact with said axle beside said lugs.

4,497,505

VEHICLE SUSPENSION SYSTEMS

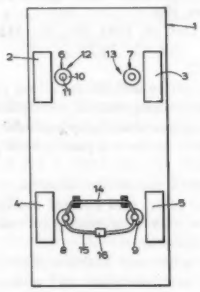
Anthony W. Harrison, Birmingham, and Robert J. Goudie, Solihull, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Oct. 26, 1982, Ser. No. 436,664

Claims priority, application United Kingdom, Nov. 5, 1981, 8133329

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—698 **20 Claims**



1. A vehicle suspension system for a vehicle with front and rear wheels, wherein the load on each of said front and rear wheels is supported by a gas spring comprising a volume of gas

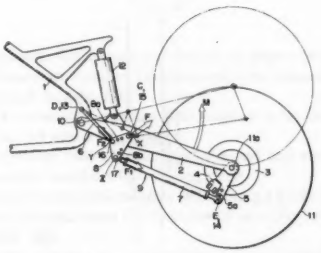
for supporting said load and a volume of hydraulic fluid through which movement of said wheel is transmitted to said volume of gas, said suspension system providing independent suspension for each of said front and rear wheels, and comprising suspension for said front wheels and suspension for said rear wheels, said suspension for said front wheels being so constructed and arranged that a roll stiffness of said suspension for said front wheels increases with an increase in said load on said front wheels, and said suspension for said rear wheels includes a torsion bar, and a connection is provided between said hydraulic fluid volumes of said gas springs supporting said rear wheels, said connection being constructed and arranged to allow flow of hydraulic fluid between said gas springs supporting said rear wheels.

4,497,506

ANTI-LIFTING MECHANISM FOR MOTOR VEHICLES

Shinichi Miyakoshi, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha. Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,135
Claims priority, application Japan, Jan. 26, 1982, 57-9856[U]
Int. Cl.³ B62K *25/04*
U.S. Cl. 280—703 **30 Claims**



1. An anti-lifting mechanism in a motor vehicle having at least one shock absorber, a rear wheel supporting member vertically and pivotably connected at the front end thereof to a body frame of the vehicle, a brake member integrally connected with a rear wheel and rotatably supported by said rear wheel supporting member, braking means for braking at least one rear wheel by pressure contact thereof with said brake member, braking force sensing means fixed to said braking means and rotatably supported by a rear axle which supports said rear wheel, and torque link means disposed between said braking force sensing means and said body frame for transmitting a braking torque of said rear wheel to the vehicle body, wherein:

said torque link means comprises:

a substantially straight first torque transfer member;

a substantially straight second torque transfer member;

a link member interposed between said first and said second torque transfer members so as to interconnect said torque transfer members, whereby said body frame is prevented from being lifted up at the rear portion thereof during braking;

said first torque transfer member being pivotally connected at one end thereof to either one of said body frame and said rear wheel supporting member;

said second torque transfer member being pivotally connected at one end thereof to said braking force sensing means; and

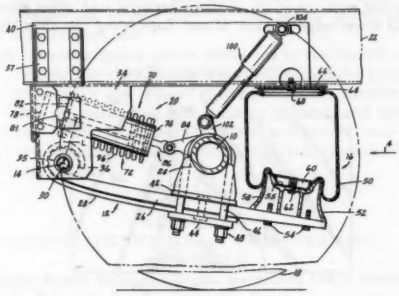
said link member having a first end pivotally connected to the other one of said body frame and said rear wheel supporting member, a second end pivotally connected to the other end of said first torque transfer member and a third end pivotally connected to the other end of said second torque transfer member.

4,497,507

VEHICLE AXLE SUSPENSION

Paul R. Chervenak, Warren, Mich., assignor to Granning Suspensions, Inc., Livonia, Mich.

Filed Apr. 11, 1983, Ser. No. 483,598
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—704 **2 Claims**



1. The combination with a vehicle frame having a frame, of a hanger depending from said frame, an auxiliary axle, means mounting said axle for up and down pivotal movement comprising a generally horizontal beam assembly whicn extends longitudinally of the vehicle and is pivoted at one end to said hanger for movement about a first horizontal axis, said axle being secured to said beam assembly between its ends in spaced relation to said first horizontal axis, selectively operable mechanism depending from said frame and acting on the opposite end of said beam assembly for forcing said beam assembly and axle downward to a load-supporting position, and means effective when said mechanism is not operating for lifting said beam assembly and axle to an elevated position above said load-supporting position, said lifting means comprising a power device having an elongated extensible and contractable resilient unit one end of which is connected to said axle, the opposite end of the said resilient unit being pivoted to said hanger for movement of said resilient unit about a second horizontal axis spaced from the first horizontal axis, said resilient unit applying a force on a line in the direction of its length to urge said beam assembly and axle to said elevated position, and said resilient unit and second horizontal axis being so located that the lever arm of the line of force with respect to said first horizontal axis decreases in length as the beam assembly and axle are forced downward to load-supporting position.

4,497,508

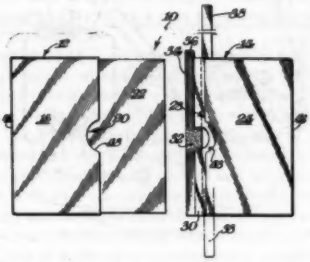
PROTECTIVE BOOK COVER

Edward L. McHugh, 7437 Royal Dominion Dr., Bethesda, Md. 20817

Continuation-in-part of Ser. No. 179,435, Aug. 19, 1980, Pat. No. 4,355,822. This application Jun. 28, 1982, Ser. No. 392,372
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ B42D *3/10, 3/06, 3/00*
U.S. Cl. 281—34 **7 Claims**

1. A removable book cover comprising a first pocket section and a second pocket section for receiving a respective cover of a book, each of said pocket sections being of envelope-type form having an inner member and an outer member, said inner member and said outer member having coterminous upper edges and coterminous lower edges parallel to said upper edges and having coterminous remote edges perpendicular to said upper edges and said lower edges, said inner and outer members being connected together along said coterminous upper and lower and remote edges, each of said pocket sections being completely open along its side opposite said remote edge, said outer member of each of said pocket sections extend-

ing outwardly beyond its open side whereby one of said pocket sections may be telescoped over the front cover of a book and the other of said pocket sections may be telescoped over the back cover of the book with said flaps extending toward each other, each of said flaps having an upper edge and a lower edge disposed in generally the same direction as said respective upper edge and said lower edge of its pocket section, said upper edge and lower edge of each of said flaps being tapered toward each other, the distance between said upper edge and said lower edge of each of said flaps being less than the distance between said upper edge and said lower edge of its pocket section whereby after said pocket sections have been telescoped over the front and back covers of the book said flap of said first pocket section may be inserted in a completely flat condition against the cover of the book, and adjustable attaching means on said flap of said second pocket section whereby after said first flap is tucked into said second pocket section said first and said second pocket sections may be secured together by said attaching means to thereby retain said pocket sections on their respective covers of the book.

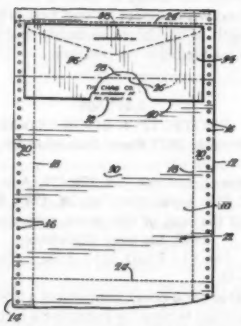


4,497,509

CONTINUOUS BUSINESS FORM FOR AUTOMATED MAILING

Thomas C. Gore, Crystal Lake, Ill., assignor to Uarco Incorporated, Barrington, Ill.

Filed Sep. 16, 1982, Ser. No. 419,547
Int. Cl.³ B41L *1/26*
U.S. Cl. 282—11.5 A **10 Claims**



1. A continuous business form for use in automated mailing systems or the like, comprising:

a single elongated ply of paper having feeding means on at least one longitudinal edge;

a longitudinal line of weakening adjacent said edge(s) but spaced therefrom sufficiently to accomodate the associated one of said feeding means to define a removable feed strip and a main panel;

a plurality of cross lines of weakening extending across said ply to divide said main pane into alternating mailing facilitating panels and message bearing panels, with each said mailing facilitating panel having a length longitudinally of the ply that is a minor fraction of the length of each message bearing panel longitudinally of the web; and

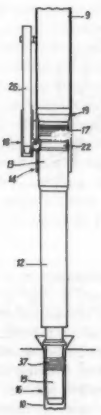
means secured to said mailing facilitating panels and cooperating therewith without substantially obstructing said message bearing panels to define mailing pieces for said message bearing panels.

4,497,510

CONNECTION-DISCONNECTION DEVICE BETWEEN ONE RIGID PIPE, INSIDE WELL-TUBING CONNECTED TO A BASE BY AN ARTICULATED COUPLING, AND ANOTHER RIGID PIPE FIXED TO THIS BASE

Philippe Cabrit, Pau; Jean Mourlevat, Roquefort S/Garonne, and Jacques de Saint-Palais, Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Continuation of Ser. No. 096,840, Nov. 23, 1980, abandoned.
This application Jul. 29, 1983, Ser. No. 518,442
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—18 **11 Claims**



1. A connection-disconnection device for use between pipe ends, comprising in combination:

one pipe end and another pipe end spaced therefrom;

an adaptor received within each pipe end and extending therebeyond, toward, and in spaced relation to the other adaptor;

a flexible pipe, adapted to be stretched, interconnecting said adaptors;

a lock device carried on at least one of said pipe ends, said lock device having a lock element interengageable with a lock recess on the associated one of said adaptors to secure said one adaptor in said one of said pipe ends;

sealing means between each one of said adaptors and its associated pipe end for sealing engagement therewith;

and positioning means operable between at least one of said adaptors and its associated pipe end, said positioning means including inclined surface means on said one adaptor in engagement with inclined surface means on its associated pipe end for seating said one adaptor in selected longitudinal relation with respect to its associated pipe end and for longitudinally locating said one adaptor for interengagement of said lock recess with said lock element.

4,497,511

CONNECTORS FOR VESSELS OR PIPES

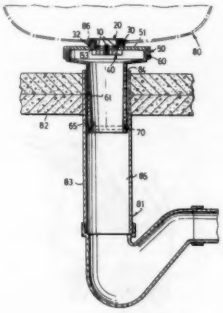
Allan D. Barker, Nerang, Australia, assignor to A.D. & R.E. Barker Pty. Ltd., Nerang, Australia

PCT No. PCT/AU80/00106, § 371 Date Aug. 2, 1982, § 102(e) Date Aug. 2, 1982, PCT Pub. No. WO82/01928, PCT Pub. Date Jun. 10, 1982

PCT Filed Dec. 4, 1980, Ser. No. 403,655

Int. Cl.³ F16L *5/00*

U.S. Cl. 285—158 **10 Claims**



1. A connector for connecting vessels or pipes comprising:

a first connection member (**20**) adapted to be connected to a first vessel or pipe (**80**);

a second connection member (**60**) adapted to be connected to a second vessel or pipe (**83**);

clamping means (**40**) adapted to secure said first and second connection members (**20, 60**) together;

said second connection member (**60**) having a portion (**63**) of greater diameter than the diameter of said first connection member (**20**);

a wall (**51**) closing said portion (**63**), said wall (**51**) having a hole (**53**) formed therein to receive said first connection member (**20**) to form the connection between said vessels or pipes (**80, 83**); and

resilient sealing means (**30**) surrounding the hole (**53**) formed in the wall (**51**) and adapted to be compressed between said first and second connection members (**20, 60**) to form a fluid-tight seal therebetween.

4,497,512

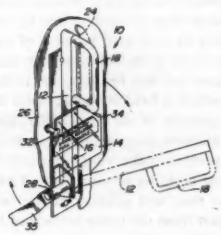
EMERGENCY RELEASE HANDLE

Lionel Sherrow, Huntingdon Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 19, 1983, Ser. No. 533,388

Int. Cl.³ E05C *15/02*

U.S. Cl. 292—92 **6 Claims**



1. In combination with a linkage means element for actuating a mechanism in a railway car under emergency conditions, means for actuating said linkage means under emergency conditions comprising:

(a) a handle pivotally mounted within an interior wall of said rail car and connected to said linkage means;

(b) a flexible member adapted to be connected to said handle and including at least two slots therein;

(c) retaining elements connected to said interior wall through said slots to normally hold said flexible member against said interior wall and said handle within said interior wall; and

(d) manual gripping means connected to said handle extending away from said interior wall to permit a person to manually grip and pull to cause said guard member to flex and move past said retaining elements and cause said handle to be pivoted within said interior wall to actuate said linkage means to actuate said mechanism in said railcar.

4,497,513

LOCKING DEVICE FOR DOOR OF COOKING APPARATUS

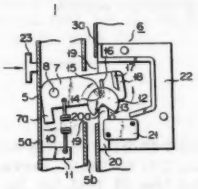
Takafumi Sasaki, Hokkaido, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 15, 1982, Ser. No. 418,543

Claims priority, application Japan, Sep. 21, 1981, 56-148995

Int. Cl.³ E05C *3/16*

U.S. Cl. 292—217 **4 Claims**



1. A locking device for a door of a cooking apparatus, comprising:

a cooking apparatus housing including a door;

an arm including an end portion, said arm being pivotably mounted at an inside portion of the door and including means for pivoting said arm within a limit of a predetermined rotation angle about a pivoting axis;

an eccentric cam rockably mounted on the end portion of said arm, said eccentric cam having a notched portion for the locking the door;

means for rocking said eccentric cam within the limit of a predetermined angle about a rocking axis;

engaging means provided in the cooking apparatus housing, said engaging means being engaged with said notched portion; and

means for switching an energizing circuit of said cooking apparatus, said switching means being operated by said notched portion.

4,497,514

INSIDE-HANDLE ARRANGEMENT FOR AN AUTOMOTIVE VEHICLE DOOR ASSEMBLY

Masaichi Moriya, Chigasaki, and Osamu Seko, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, and Ohi Seisakusho Co., Ltd., both of Yokohama, Japan

Filed May 5, 1982, Ser. No. 375,010

Claims priority, application Japan, May 6, 1981, 56-66851

Int. Cl.³ E05B *3/00*

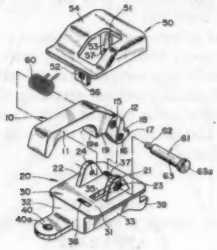
U.S. Cl. 292—336.3 **26 Claims**

1. An inside handle arrangement for operating a door latch mechanism of an automotive vehicle door assembly, comprising:

an inside handle co-operatively associated with said door

latch mechanism and movable between a first normal position and a second operated position;

a bracket fixed to a door panel for pivoting said inside handle adjacent said door panel, said bracket having an opening for receiving one end of said inside handle and permitting said inside handle to move between said first and second positions; and



means for closing said opening, said closing means including a portion of said inside handle adapted to contact a portion of said bracket adjacent said opening to establish an air-blocking closure therebetween at least when said inside handle is in said first position.

4,497,515

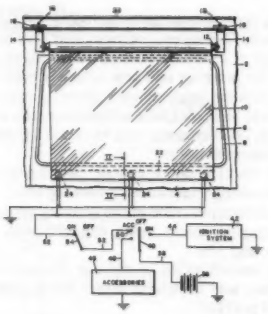
STAKE-OUT CURTAINS FOR AUTOMOBILES

Jay M. Appelson, 2211 W. 71st St., Prairie Village, Kans. 66208

Filed Mar. 28, 1983, Ser. No. 479,641

Int. Cl.³ B60J *1/02*

U.S. Cl. 296—141 **10 Claims**



1. A stake-out curtain for an automotive vehicle window, said curtain comprising:

a. a curtain comprising a sheet at least a portion of the area of which is formed of one-way viewing material of a type such that substantial vision may be had therethrough only from the side thereof at which ambient light is lower than that at its opposite side, and

b. quick-release attaching means to secure said curtain releasably in a use position overlying said vehicle window, whereby to permit outward vision through said window from the interior of said vehicle, but not vision into said vehicle from points external thereto, so long as ambient light outside of said vehicle is greater than that inside of said vehicle.

4,497,516

SEALING ASSEMBLY FOR AUTOMOTIVE FRONT-PILLAR AND SIDE-DOOR ARRANGEMENT

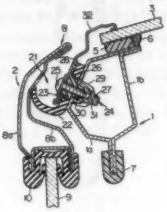
Yoshinori Morita, Yokohama, and Yutaka Ohmura, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 6, 1982, Ser. No. 395,115

Claims priority, application Japan, Aug. 4, 1981, 56-116063[U]

Int. Cl.³ B62D *27/04*

U.S. Cl. 296—206 **4 Claims**



1. A sealing assembly for a front-pillar and side-door arrangement of an automotive vehicle, the front-pillar and side-door arrangement including a front pillar having a wall portion formed with an opening, a front window molding having a portion located adjacent to said wall portion and formed with an opening substantially aligned with the opening in said wall portion, and a side-door sash assembly spaced apart from said wall portion, the sealing assembly comprising:

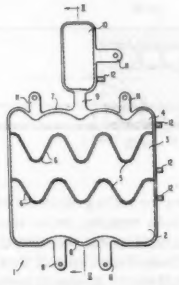
a flexible sealing member having an inner portion securely intervening between the outer surface of the wall portion and the inner surface of the window molding and an outer portion warped from the inner portion and held in elastically pressing contact with said side-door sash assembly, the sealing member being formed with an opening in the inner portion thereof; and

a snap element passed through the opening in the sealing member and projecting into the front pillar through the opening in said wall portion for securing the inner portion of said sealing member between said window molding and said wall portion, wherein said snap element has a head portion passed through the opening in the sealing member and a stem portion projecting into the front pillar through the opening in said wall portion of the front pillar and smaller in cross sectional area than said head portion so that the head portion has adjacent to the stem portion an end face which is held in contact with the outer surface of said wall portion of the front pillar, said head portion of said snap element intervening between the outer surface of said wall portion of the front pillar and the inner surface of the window molding portion located adjacent to said wall portion so that said portion of the window molding is spaced apart from the outer surface of the wall portion of the front pillar, said snap element being formed with a blind bore which extends at least in said head portion of the snap element and which is open toward said front end portion of said side-door sash assembly.

4,497,517
MOTOR VEHICLE SEAT

Günter Gmeiner, Sindelfingen; Hermann Möller, Aidlingen; Rudolf Andres, Sindelfingen, and Eberhard Faust, Stuttgart-Degerloch, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,597
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125588
Int. Cl.³ A47C 7/02
U.S. Cl. 297—231 7 Claims

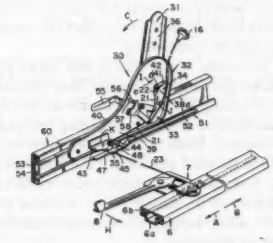


1. A seat cushion adapted to be concealed within a backrest portion of a motor vehicle seat, comprising at least two superimposed separately inflatable chamber means for forming a support for a spinal column of a user of the seat cushion, continuous connecting rib means extending generally transversely of the seat cushion between adjoining chamber means of said at least two superimposed chambers, said connecting rib means disposed so as to follow an undulating path such that adjoining walls of adjoining chamber means of said at least two superimposed chamber means form an area of tooth-like meshing, said area being a transition area wherein adjoining chamber means of said at least two superimposed chamber means inflated to different hardnesses are less apparent to a user supported thereby.

4,497,518
ADJUSTABLE SEAT STRUCTURE FOR A MOTOR VEHICLE

Shinichi Nishimura, Zama; Yoshinori Akiyama, and Yuzo Kanazawa, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited and Ikeda Bussan Co., Ltd., both of Yokohama, Japan

Filed Dec. 23, 1981, Ser. No. 333,765
Claims priority, application Japan, Dec. 26, 1980, 55-186286
Int. Cl.³ A47C 1/10
U.S. Cl. 297—341 11 Claims



1. An adjustable seat structure for a motor vehicle having a seat cushion and a seat back, comprising:

a seat support structure including a stationary support member, a movable support member slidably mounted on said stationary support member and carrying the seat cushion, and latching means for latching said movable support member on said stationary support member at a selected position of a plurality of selectable positions and allowing a forward movement of said movable support member from said selected position when released;

a base plate fixed to said movable support member of said seat support structure;

tilting means for allowing the seat back to be tilted relative to the seat cushion, said tilting means including a seat back arm fixedly connected to the seat back and pivotally connected to said base plate and rotatably supported thereby;

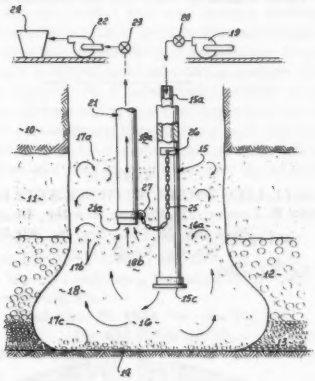
sensing means disposed on said base plate for sensing the rotation of said seat back arm in response to the forward tilting of the seat back; and

latch release means disposed on said base plate for releasing said latching means in response to the forward tilting of the seat back during a forward movement of said movable support member relative to said stationary member and the subsequent movement until said movable support member returns to said selected position.

4,497,519
METAL PARTICLE RECOVERY AT SUB-SURFACE LOCATIONS

Donovan B. Grable, Rte. 8 - Box 317, Caldwell, Id. 83605

Filed Nov. 22, 1982, Ser. No. 443,534
Int. Cl.³ E02F 7/00
U.S. Cl. 299—8 8 Claims



1. Apparatus for recovering metallic particles in a formation at a sub-surface locality, comprising

(a) a first downwardly extending duct having a discharge and operable to deliver water in a pressurized stream to said locality via said discharge for effecting differential elevation of metallic and non-metallic particles in a turbulent water zone associate with said discharge, and

(b) a second downwardly extending duct having an intake positioned in said zone for drawing water and metallic particles from said zone into said second duct,

(c) a loose flexible interconnection between said ducts accomodating second duct movement in its entirety up and down relative to the first duct and relative movement of the ducts toward and away from one another, as well as positioning of the second duct intake above the level of the first duct discharge,

(d) means for adjusting the position of the intake of the second duct relative to the discharge of the first duct,

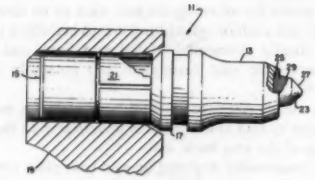
(e) and a carrier vehicle movable over terrain and water and suspending said ducts.

4,497,520

ROTATABLE CUTTING BIT

Randall W. Ojanen, Bristol, Va., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 29, 1983, Ser. No. 489,990
Int. Cl.³ E21C 35/18
U.S. Cl. 299—86 15 Claims



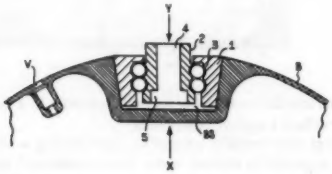
1. A rotatable cutting bit comprising a head portion, a shank portion depending from said head portion along a longitudinal axis, said head portion having a socket at the forward end, a hard insert having coaxially aligned and integral sections, said sections comprising a base section, a tip section, and an intermediate section contiguous said base and tip section, said base being fixedly mounted in said socket and having a first diameter, said tip section being conically shaped and having a maximum second diameter, said intermediate section having a maximum third diameter, said second and third diameters each being less than said first diameter, said intermediate section and said base forming a fillet at the juncture thereof whereby said base forms a shoulder with said intermediate section.

4,497,521

BALL-LIKE WHEEL WITH SOCKETS FOR AXLE

Michael B. Lowery, 228 Preston New Rd., Blackpool, England

Filed Jun. 28, 1982, Ser. No. 392,517
Int. Cl.³ B60B 5/02, 27/02
U.S. Cl. 301—106 7 Claims



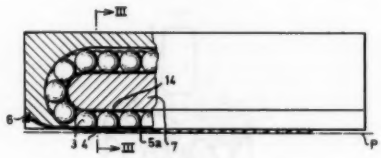
1. A ball-like ground engaging apparatus for use in human, gravity or low powered vehicles, said apparatus comprising a ball-like member of plastic material moulded in one piece and including diametrically opposite inwardly tapering sockets accommodating a bearing in each socket, said bearing including a bearing housing and a spindle defining a hollow shaft, said bearing housing being correspondingly tapered inwardly and the bearing housing being received in the socket and gripped fully by the walls of the socket, the socket depth is selected to be greater than the length of the bearing housing and said hollow shaft having a captive nut recess at its innermost end adapted to accommodate a nut for securing an axle stub in said hollow shaft.

4,497,522

GUIDE MEANS FOR ROLLING ELEMENTS OF A BALL-RACE DEVICE

Franz Szenger, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,125
Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3218845
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C 13 Claims



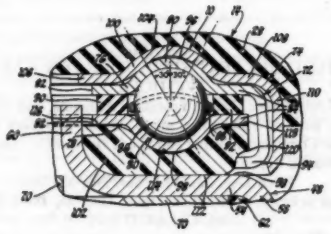
1. Guide means for rolling elements of a travel shoe having plural rows of balls rotating under load in a partial section thereof, characterized by the fact that the travel path of each row of balls is in a ball-travel plane, that the ball-travel planes of the respective rows are in spaced parallel relation, the spacing between ball-travel planes of adjacent rows being less than ball diameter with the balls (2, 3, 4) of adjacent rows in nested contact and staggered in their direction of travel with respect to each other by a length equal to the radius of a ball.

4,497,523

MODULAR SUSPENSION STRUT BEARING

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1983, Ser. No. 470,158
Int. Cl.³ F16C 19/12; B60G 11/42
U.S. Cl. 384—613 4 Claims



1. A modular bearing assembly providing a rotatable support and transferring loads between two relatively rotatable parts of a vehicle suspension, comprising,

a bearing including upper and lower races providing opposed raceways on the inner surfaces thereof for a complement of rolling antifriction elements, said raceways and rolling antifriction elements engaging one another so as to transfer imposed loads through said elements and through said races to selected portions of the outer surfaces thereof covering less than said entire outer surfaces, said races being formed of a relatively thin material of insufficient strength to solely support the imposed loads transferred to said selected portions,

a housing module enclosing and cooperatively strengthening the bearing module, including an upper and lower housing member each having an outer surface movable with one of said relatively rotatable parts of the suspension and each having an inner surface shaped to conform to the outer

surfaces of said respective upper and lower races so as to transfer imposed loads only to said selected portions of the outer surfaces of said races so as to coact therewith to structurally reinforce said races to provide a structural unit of sufficient strength to resist the loads only at said selected portions, whereby the structural cooperation between the races and housing members provides bearing assembly with races of minimal thickness which is capable of resisting vehicle loads.

4,497,524

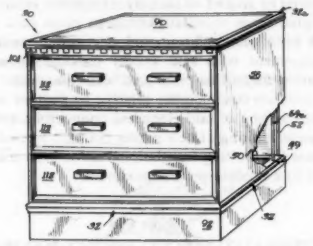
KNOCK-DOWN FURNITURE ASSEMBLY

Nelson Levings, Jr., P.O. Box 204, Palos Park, Ill. 60464; Donald J. Evans, deceased, late of Naperville, Ill., and by Stephen G. Evans, administrator, Westhaven, Ill.

Filed Sep. 30, 1982, Ser. No. 430,669

Int. Cl.³ A47B *47/04*; F16B *12/14*

U.S. Cl. 312—265 **24 Claims**



1. A knock-down furniture assembly comprising: substantially similar top frame and bottom frame members each comprising means defining a frame and at least one fastener means coupled to said frame and at least one side wall member including means for rotatably receiving elongate mating fastener means extending from top to bottom of said side wall member for mating with the respective fastener means of both said top and bottom frame members for assembling said top and bottom frame members to said side wall member to define an assembled state of said knock-down furniture assembly; wherein each said elongate mating fastener means comprises an elongate rod-like member having at one end thereof an externally threaded fastener portion defining a major thread diameter of a first dimension and at the opposite end thereof an internally threaded fastener portion defining a major thread diameter of a second dimension which is equal to or less than said first dimension and an intermediate rod-like portion joining said first and second end portions; each said elongate mating fastener means further including driver means formed at a bottom portion of said internally threaded portion thereof and dimensioned for receiving a tool of lesser cross-sectional dimension thatn the minor thread diameter of said internally threaded portion for rotating said rod-like member to achieve threadable advancement of said externally threaded end thereof with respect to he aligned fastener means of one of said top and bottom frame members.

4,497,525

CONTAINER, IN PARTICULAR FOR TRANSPORTING FREIGHT BY AIR

Gerhard Mittelmann, Oehningen, Fed. Rep. of Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

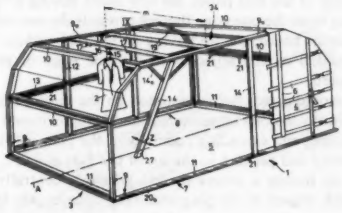
Continuation of Ser. No. 40,465, May 18, 1979,. This application Jun. 18, 1982, Ser. No. 390,052

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824434

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ B65D *88/00*; A47F *5/10*

U.S. Cl. 312—321 **4 Claims**



1. A freight container for transporting hanging items and/or stackable items having a floor and a load supporting structural frame secured thereto, said frame including a plurality of load bearing rods running above said floor, the improvement comprising at least one support rod pivotably mounted on said frame and movable from a first load bearing position where said at least one support rod extends from said frame to said floor in a direction substantially perpendicular to said load bearing rods to a second non-load bearing position where said at least one support rod is substantially parallel to said load bearing rods wherein said at least one support rod is in said first position when transporting hanging items such that said at least one support rod aids in supporting said plurality of load bearing rods when said load bearing rods carry the hanging items.

4,497,526

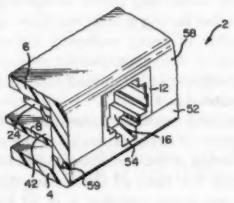
CIRCUIT BOARD HOUSING HAVING SELF-CONTAINED MODULAR JACK

Ronald W. Myers, Landisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 28, 1983, Ser. No. 479,248

Int. Cl.³ H01R *23/72*

U.S. Cl. 339—17 LC **7 Claims**



1. The combination of a modular jack receptacle mounted on one surface of a circuit board and a first panel which extends parallel to, and is spaced from, the other surface of the circuit board, the modular jack receptacle comprising an insulating housing having a mating end and a rearward end, a plug receiving opening extending into the mating end, the opening having opposed internal endwalls and first and second opening sidewalls, the housing having oppositely facing external end-

walls and first and second external sidewalls which are proximate to the first and second opening sidewalls, a plurality of conductors in side-by-side relationship, each conductor having a contact portion which extends from the first opening sidewall diagonally into the opening from a location adjacent to the mating end and a lead portion which extends to the rearward end of the housing and to the one surface of the circuit board, the opening having latching shoulder means therein facing inwardly of the mating end for cooperation with a complementary latching shoulder on a modular plug, the combination of the modular jack receptacle, the circuit board, and the panel being characterized in that:

the circuit board has one edge which extends parallel to one edge of the first panel, the first panel having a lip extending from the one edge thereof towards the one edge of the circuit board, the lip having an internal surface which is parallel to and adjacent to the one edge of the circuit board,

the modular jack being mounted on the circuit board adjacent to the one edge thereof and being oriented with the mating end extending normally of the plane of the circuit board and parallel to the lip of the first panel,

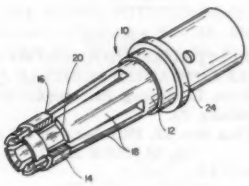
the lip having a recess therein which is centrally located with respect to the plug-receiving opening, the lip constituting at least portions of the mating end of the modular jack, the latching shoulder means of the modular jack being on the internal surface of the lip adjacent to the recess in the lip.

4,497,527

SUPPLEMENTARY FORCE HEAT-RECOVERABLE CONNECTING DEVICE

John K. Cameron, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 30, 1982, Ser. No. 430,556
Int. Cl.³ H01R *13/20*
U.S. Cl. 339—30 **9 Claims**



1. A reusable connecting device comprising:

a socket member having at least two tines, at least one of said tines capable of being resiliently deformed away from another tine to define a socket for receiving and holding a substrate with sufficient inward force to provide a physical connection; and

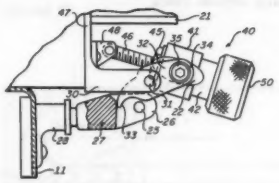
at least one driver member composed of heat-recoverable metal capable of being expanded in the martensitic phase and recovering in the austenitic phase, said driver loosely surrounding the tines of the socket member when the metal of the driver member is in its martensitic phase, allowing at least one of said tines to be resiliently deformed to define said socket member without further expanding said driver member, the driver member capable of instantaneous inward recovery when the metal of the driver member is in its austenitic phase to exert additional uniform inward force on the tines, said driver member capable of maintaining stable mating contact characteristics with a substrate that may be inserted within the socket.

4,497,528

AVIONICS CHASSIS INSERTION/EXTRACTION MECHANISM

William H. Murtland, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 6, 1982, Ser. No. 405,839
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **9 Claims**



1. A mechanism for inserting and extracting an electronics chassis member having a plurality of electrical connectors into and out of a holding fixture member having corresponding mating connectors, the combination comprising:

(a) a keeper pin secured to one of said members,

(b) a pivot pin secured to said member other than said one,

(c) a lever mounted on said pivot pin, said lever having one end thereof engageable with said keeper pin,

(d) rotatably actuated translating means with actuating knob means, comprising an externally threaded shaft and a mating internally threaded cylinder said translating means having a part secured to said one member and a part secured to an end of said lever opposite said one end and adapted upon rotation thereof to pivot said lever about said pivot pin to bring said one end of said lever into engagement with said keeper pin and upon continued rotation thereof to pivot said lever about said keeper pin to translate one member relative to another member and effect mating of said electrical connectors, and

(e) torque limiting clutch means coupled to said translating means for limiting translational force between said members to a predetermined maximum.

4,497,529

INTEGRATED CIRCUIT SOCKET HAVING AN IMPROVED COVER

Mitsuo Hoshino, Atsugi; Osamu Fukushima, Kawasaki, and Toshio Kakuta, Higashiosaka, all of Japan, assignors to Sony Corporation, Tokyo and Hosiden Electronics Co., Ltd., Osaka, both of, Japan

Filed Nov. 22, 1982, Ser. No. 443,795
Claims priority, application Japan, Dec. 2, 1981, 56-180276[U]
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **15 Claims**

1. A connector comprising:

a substantially rectangular-prism-like base made of an insulating material;

a plurality of ribs formed integrally with the base at regular intervals in its lengthwise direction to extend on its top surface in a direction perpendicular to the lengthwise direction, defining a plurality of contact receiving portions located respectively between adjacent ones of said ribs;

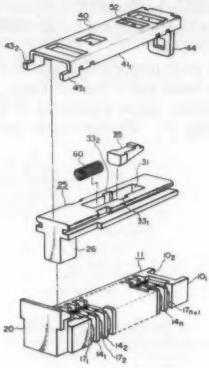
a plurality of contacts respectively disposed in the contact receiving portions and retained to the base;

an elongated cover made of an insulating material for covering the base so as to hold the conductors of an external circuit in engagement with said contacts;

a slider mounted on the cover in a manner to be slidable relative to said cover in the lengthwise direction of said cover;

retaining means for engaging the slider and the base with

each other while fixing the cover to the base with the conductors of the external circuit resiliently pressed against the contacts by the cover; and



biasing means interposed between the cover and the slider, said biasing means producing a force in the lengthwise direction of said cover and slider operative to exert a bias on said retaining means which holds the cover and the slider in engagement with the base.

4,497,530

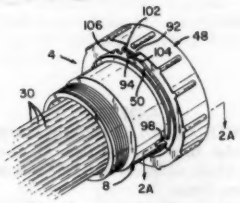
ELECTRICAL CONNECTOR HAVING A COUPLING INDICATOR

Suel G. Shannon, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1983, Ser. No. 516,625

Int. Cl.³ H01R *13/623, 3/00*

U.S. Cl. 339—89 M **12 Claims**



1. An electrical connector assembly of the type comprising a plug member and a receptacle member each having electrical terminals secured in passageways extending therethrough, a coupling member rotatingly mounted on the plug member and having threads on an internal surface for threadable engagement with threads on an external surface of the receptacle member to mate the plug member and receptacle member together and the electrical terminals therein, and a spring member secured onto said plug member retaining said coupling member onto said plug member, characterized in that:

said spring member has a hammer section and a detent section adjacent each other;

said coupling member has an anvil section and a pin member, said pin member rides along an outer surface of said spring member as the threads of said coupling member are threadably moving along the threads of said receptacle member and engages said detent section causing said spring member to be radially and circumferentially deformed thereby cocking said hammer section which forcefully strikes said anvil section as said pin member moves into a relief area between said hammer section and said detent section resulting in a tactile, audible and visible indication that the connector assembly is completely mated.

4,497,531

ELECTRICAL CONNECTOR

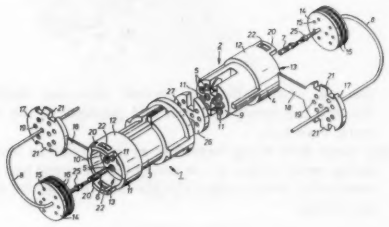
Robert W. Baker, Harrow, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 19, 1982, Ser. No. 399,505

Claims priority, application United Kingdom, Jul. 23, 1981, 8122671

Int. Cl.³ H01R *13/52*

U.S. Cl. 339—94 M **4 Claims**



1. An electrical connector comprising a housing of insulating material formed with a plurality of through passageways each to receive an electrical terminal terminating an electrical conductor, each passageway extending from a mating face to an opposite, conductor-entry face of the housing, including an axially extending shroud surrounding the conductor-entry face of the housing and defining a cavity into which the conductor-entry ends of the passageways open; a single sealing member receivable in the cavity and having a plurality of holes therethrough each sized to receive and grip a conductor passing through the sealing member into a respective passageway in the housing; and a sealing-member-retaining lid formed with a plurality of through holes each to pass a terminal entering a respective passageway in the housing, the lid serving to close the cavity and compress the sealing member between the lid and the conductor-entry face of the housing and into sealing engagement with the shroud and with conductors passing through the holes in the sealing member, the lid and the shroud being formed with cooperating latching means serving to latch the lid to the housing in the closed position, the lid being hingedly connected to the housing by means of an integrally formed hinge strap portion, and being movable between an open position remote from the cavity to permit insertion of the sealing member into the cavity, and a closed position closing the cavity.

4,497,532

HEAT SHIELDED, SPARK PLUG BOOT ASSEMBLY

Michael J. Bezusko; Daniel P. Liska, and Joseph A. McGee, all of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1983, Ser. No. 545,359

Int. Cl.³ H01R *13/533, 13/658*

U.S. Cl. 339—112 R **5 Claims**

1. A heat shielded, spark plug boot assembly for an ignition cable connector, comprising,

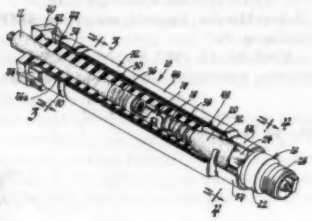
a tubular elastomeric boot having a cable end portion for receiving an ignition cable, an intermediate cavity portion for housing a terminal at the end of the ignition cable, and a seal end portion for receiving a spark plug and sealing around the insulator thereof, and

a heat shield which is mounted on the cable end portion of the elastomeric boot and which extends past the seal end

portion of the elastomeric boot for engaging a ground member,

said heat shield having an outer metal shell and an inner dielectric barrier,

said inner dielectric barrier surrounding the cavity and seal end portions of the elastomeric boot and extending past



the seal end portion to prevent electrical discharges through the cavity and seal end portions of the elastomeric boot and,

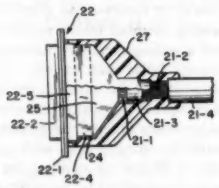
said metal shell being formed so as to provide an inwardly facing metal surface at one end of the dielectric barrier for conducting corona around rather than through the dielectric barrier.

4,497,533

SHIELDED CABLE SYSTEM AND METHOD

Anthony T. Genova, Bolton; Vincent Squitieri, Billerica, both of Mass., and William G. Lionetta, Jr., Hampton, N.H., assignors to Chomerics, Inc., Woburn, Mass.

Filed Jun. 21, 1982, Ser. No. 390,547
Int. Cl.³ H01R *13/648, 13/658*
U.S. Cl. 339—143 R **7 Claims**



1. A cable system comprising a connector having a plurality of pins supported in an insulator which is itself supported in a metal portion, a cable having a plurality of wires in an electrically conductive cable shield, said wires coupled to said pins, a thin preformed electrically conductive, conductive particle loaded pressure sensitive adhesive carrying insert folded at predetermined fold lines and positioned about a metal portion of the connector and the electrically conductive cable shield acting as an enclosing extension of said shield with the adhesive of said insert in contact with said connector and said shield and means over said insert for urging said adhesive portion of said insert against said connector and said shield to aid in electrical contact therewith.

4,497,534

HOLOGRAPHIC OPTICAL HEAD

Glenn T. Sincerbox, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,659
Int. Cl.³ G02B *5/32*
U.S. Cl. 350—3.72 **10 Claims**

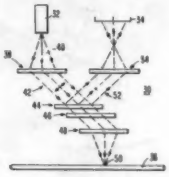
1. A holographic optical head through which a coherent beam of radiation is directed to a record medium and through which a reflected beam of radiation from said record medium is directed to means for sensing the reflected beam comprising:

first holographic means for diffracting a first coherent beam into the −1 order direction over a first optical path,

beam director means positioned in said first optical path, said beam director means adapted for directing said first beam along said first path,

a quarter-wave plate positioned in said first optical path so that said first beam passes therethrough,

second holographic means positioned in said first optical path diffracting the coherent beam into the +1 order



direction for converging said first beam into a point focus on the record medium, and

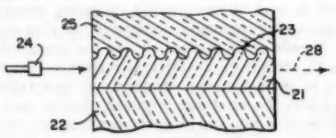
third holographic means positioned in a second optical path that is at an angle to said first optical path at said beam director means whereby the light reflected from said record medium passes in reverse direction along said first optical path through said second holographic means and said quarter-wave plate to said beam director means where the light is redirected along said second optical path to said third holographic means and then to the sensing means.

4,497,535

OPTICAL PULSE GENERATOR

Herbert G. Winful, Brighton, and Gene D. Cooperman, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 19, 1982, Ser. No. 359,736
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.12 **2 Claims**



1. A passive optical pulse generator device comprising

a substrate; and

a thin wave-guiding layer of material deposited thereon, said material having a large third-order nonlinear susceptibility so that the refractive index of said material changes appreciably in response to changes in light intensity,

wherein said material is indium antimonide.

4,497,536

COUPLING OF DIELECTRIC OPTICAL WAVEGUIDES

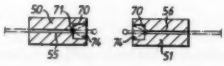
David B. Payne, Wickham Market, and Colin A. Millar, Stowmarket, both of, assignors to Post Office, London, England

Continuation of Ser. No. 166,891, Jul. 8, 1980, abandoned. This application May 27, 1983, Ser. No. 497,219

Claims priority, application United Kingdom, Jul. 9, 1979, 79.23817; Nov. 5, 1979, 79.38194

Int. Cl.[3] G02B 7/26

U.S. Cl. 350—96.21 16 Claims



1. An optical waveguide coupling assembly comprising a plurality of coupling elements, wherein the coupling elements each have a groove therein, each of which grooves slidably supports a waveguide, the arrangement being such that the axes of the waveguides lie in a common plane, and wherein each waveguide has a bead integral with its end, the surface of the bead which lies towards the waveguide being in contact with a locating surface on the respective coupling element such that axial movement of each waveguide in one direction only is restricted thereby with axial movement in the direction opposite to said one direction being unrestricted.

4,497,537

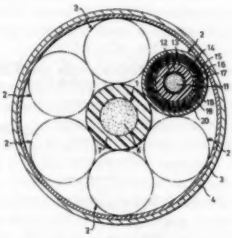
ELECTRIC AND/OR OPTICAL CABLE

Godfrey R. M. Dench, Orpington, England, assignor to BICC Public Limited Company, London, England

Filed Jun. 9, 1983, Ser. No. 502,809

Int. Cl.[3] G02B 5/16; H01B 7/14

U.S. Cl. 350—96.23 12 Claims



1. A cable comprising at least one cable core, and, surrounding the core or assembly of cores, a water-impermeable barrier comprising a cushioning layer of elastomeric material; a substantially circumferentially continuous wall of metal or metal alloy constituted by at least one longitudinally applied, transversely folded metal tape which carries a coating of plastics material on its outwardly facing surface; at least one elongate flexible binder helically wound around the metal wall under such a tension that at least one helically extending corrugation is formed in the metal wall throughout the length of the cable and that elastomeric material of the cushioning layer fills the trough of the helical corrugation in the inner surface of the metal wall; and, surrounding the metal wall, an extruded sheath of plastics material which is bonded to the plastics coating on the outer surface of the metal tape or tapes constituting the metal wall.

4,497,538

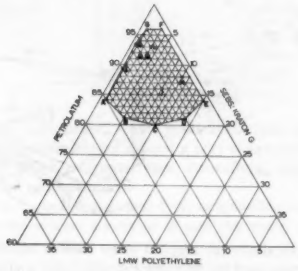
FILLED TRANSMISSION CABLE

Naren I. Patel, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Aug. 10, 1983, Ser. No. 521,954

Int. Cl.[3] B32B 27/00; G02B 5/16; H01B 7/00

U.S. Cl. 350—96.23 5 Claims



1. A cable comprising a plurality of conductors contained within a jacket leaving voids between the conductors and the jacket and a filling material substantially filling the voids, the invention characterized in that the filling material consists essentially of a mixture of:

(A) styrene-ethylene butylene-styrene block copolymer having a styrene to rubber ratio of 0.39 to 0.41,

(B) polyethylene having a molecular weight from 1,000 to 10,000, and,

(C) petrolatum,

the ingredients A, B and C having relative proportions falling within the shaded area abounded by ABCDEFGHI of the FIGURE.

4,497,539

ANTIREFLECTION OPTICAL COATING

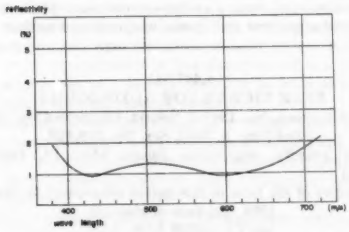
Kunio Sakurai, Hino; Hiroshi Ito, Tachikawa, and Takashi Nozaki, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1982, Ser. No. 432,989

Claims priority, application Japan, Oct. 7, 1981, 56-158797

Int. Cl.[3] G02B 1/10

U.S. Cl. 350—164 6 Claims

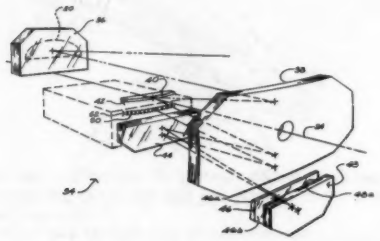


1. A multilayer antireflection film for optical parts made of synthetic resin consisting essentially of a plurality of superimposed evaporation films of silicon monoxide, each film having a different refractive index resulting from different evaporation conditions.

4,497,540
OPTICAL SYSTEM

James B. Breckinridge, La Canada; Norman A. Page, Monrovia, both of Calif.; Roland V. Shack, and Robert R. Shannon, both of Tucson, Ariz., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1983, Ser. No. 478,130
Int. Cl.[3] G02B 5/10
U.S. Cl. 350—168 32 Claims



1. An optical system adapted to be used at elevations high above a surface and for forming a spectral and spatial image of the surface, comprising:

entrance aperture means through which light from the surface enters the system;

first means for focusing light passing through the entrance aperture means on a first focal plane within the system, said first means including

aspheric mirror means and spherical mirror means in the optical path between the entrance aperture means and the first focal plane,

said aspheric and spherical mirror means aligned relative to each other and the entrance aperture means so that the light passing through the entrance aperture means first strikes the aspheric mirror means which directs this light to a first segment of the spherical mirror means, and wherein said spherical mirror means is aligned and shaped so that said light reflects off the first segment and is focused at the first focal plane to form a spatial image of said surface; and

second means for providing a spectral image of the surface and for focusing this image at a second focal plane within the system, including

mirror means at the first focal plane for reflecting light from the first focal plane to a second segment of the spherical mirror means, with the light reflecting from said second segment being substantially collimated,

dispersing means in the optical path between the second focal plane and the spherical mirror means for dispersing the light into a spectrum of different wavelengths, and

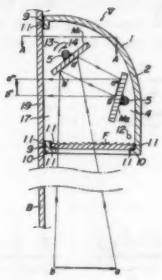
means for focusing the light at different wavelengths exiting the dispersing means at the second focal plane to form thereat a spectral and spatial image of said surface.

4,497,541
REAR VIEWER FOR AUTOMOBILE

Makoto Okamura, No. 1567-4, Sakata, Okegawa City, Japan

Filed Mar. 8, 1982, Ser. No. 355,489
Claims priority, application Japan, Mar. 17, 1981, 56-37194[U]
The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.
Int. Cl.[3] G02B 5/08, 5/10
U.S. Cl. 350—626 3 Claims

1. A rear viewer for automobile comprising, a holder frame box; a sealed type box-like retaining chamber formed in the holder frame box; a front side opening provided at front side of the holder frame box; an under side opening provided at an under side of the holder frame box; a thin plate-like Fresnel concave lens mounted on said under side opening; the front side of the holder frame box being attachable onto the outer surface of an automobile rear window glass; a first reflex mirror adjustably retained in said chamber for showing the road condition in an area from approximately immediately below a rear end portion of the automobile to a desired area behind the rear end portion of the automobile through said thin plate-like

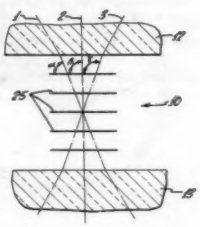


Fresnel concave lens, and a second reflex mirror adjustably retained in said chamber and arranged oppositely to the first reflex mirror for enabling the automobile driver to see the condition at the road reflected by the first reflex mirror, whereby the automobile driver can see the road condition transmitted by said plate-like Fresnel concave lens, the first reflex mirror and the second reflex mirrors as an uninverted image.

4,497,542
APPARATUS FOR MINIMIZING BEAM COLLIMATION SENSITIVITY IN OPTICAL INSTRUMENTS INCLUDING LIQUID CRYSTAL CELLS

Wilbur I. Kaye, Corona Del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 45,726, Jun. 5, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 269,141
Int. Cl.[3] G02F 1/137, 1/135
U.S. Cl. 350—335 15 Claims



1. In an optical instrument including a birefringent liquid crystal cell including a pair of plates and a zero-twist, nematic-phase, liquid crystal material between said plates, the liquid crystal molecules being oriented in and tilting in a first plane perpendicular to said cell plates, the improvement comprising:

a pair of polarizes positioned on opposite sides of said liquid crystal cell;

a filament light source positioned with the filament axis normal to said first plane; and

means for collimating the light from said source and conducting the collimated light through said polarizer and said cell, generally normal to said plates thereof, whereby

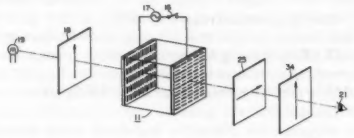
said light is more effectively collimated in said first plane than in the orthogonal planes.

4,497,543

LIQUID CRYSTAL DISPLAY WITH COLORS FROM DYE AND POLARIZER MIXED

Shigeo Aoki, Habikino; Junichi Tamamura, Yao; Yasuhiro Ukai, Yao, and Hideo Morita, Yao, all of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jun. 2, 1981, Ser. No. 269,211
Claims priority, application Japan, Jun. 28, 1980, 55-88274
Int. Cl.³ G02F 1/133
U.S. Cl. 350—337 **6 Claims**



1. A liquid crystal display element comprising:

a nematic liquid crystal cell comprising a pair of spaced opposing side plates which define a region therebetween containing a nematic liquid crystal having liquid crystal molecules, a positive dielectric anisotropy, and an N type dichroic dye mixed therein,

a transparent electrode located on an inner surface of each of said opposing side plates to which electrodes a voltage may be applied to said cell, at least one of said transparent electrodes being formed in a pattern to be displayed,

the molecules of the liquid crystal near the respective side plates of the liquid crystal cell having orientations which are substantially parallel to the respective side plates but perpendicular to each other to form a twisted nematic structure, molecules of the N type dichroic dye having the same orientation as the molecules of the liquid crystal, and the molecules of both the liquid crystal and the N type dichroic dye being oriented substantially at right angles to the planes of the respective side plates of the liquid crystal cell when a voltage is applied to said cell;

a neutral polarizing plate disposed opposite one of the side plates of the liquid crystal cell and having a direction of polarization substantially parallel to the orientation of the molecules of the liquid crystal and the N type dichroic dye near said side plate to exhibit a substantially uniform polarizing characteristic over a visible wavelength region; and

a color polarizing plate disposed adjacent the other side plate of the liquid crystal cell and having a direction of polarization substantially parallel to the orientation of the molecules of the liquid crystal and the N type dichroic dye on said other side plate to exhibit a polarizing characteristic over a specific wavelength region;

said display element being operative, upon application of a voltage across said transparent electrodes, to display said pattern in a mixed color resulting from said N type dichroic dye and said color polarizing plate.

4,497,544

OPTICAL IMAGING DEVICE AND METHOD

Gordon L. Mitchell, New Brighton, and John H. Tressler, III, Plymouth, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

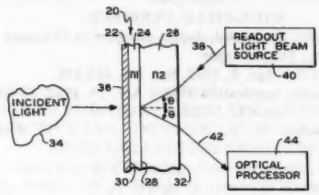
Filed Dec. 27, 1982, Ser. No. 453,446
Int. Cl.³ G02F 1/19
U.S. Cl. 350—353 **6 Claims**

1. An optical device comprising:

means for absorbing at least one wavelength of light incident thereupon;

a first layer of a first material having a first index of refraction and being in thermal contact with said absorbing means;

a second layer of a second material having a second index of refraction which is larger than said first index of refraction and which forms an interface with said first layer, wherein said first layer is between said absorbing means and said second layer;



a readout light source, which emits a coherent optical beam, adapted to illuminate at least a part of said interface at an angle which is greater than the critical angle for total internal reflection; and

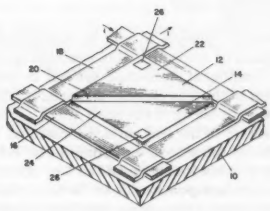
means to focus the incident light at a surface in space, and wherein at least a portion of said absorbing means intercepts said surface.

4,497,545

METHOD AND DEVICE FOR INCREASING THE DENSITY OF A PLURALITY OF SWITCHABLE MAGNETIC ELEMENTS

William E. Ross, Woodland Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,327
Int. Cl.³ G02F 1/09
U.S. Cl. 350—376 **13 Claims**



1. A method for increasing the density of a plurality of switchable magnetic post elements formed from a magnetic material upon a nonmagnetic material, comprising the steps of:

placing a magnetic material having high anisotropy upon said nonmagnetic material to form separations in said magnetic material and thus form said post elements;

arranging said separations in a grid-like pattern having a first set of separations in a first direction and a second set of separations in a second direction to form said post elements into quadrilateral shapes;

arranging further separations in alternate rows of said post elements, between said separations in said first direction, in a third direction diagonally across said quadrilaterally shaped post elements to form triangularly shaped post elements;

placing a conductive material in alignment with each of said grid-like separations in said first and second directions;

arranging still further separations in the remaining rows of said post elements, between said separations in said first direction, in a fourth direction diagonally across said quadrilaterally shaped post elements to form additional triangularly shaped post elements; and

placing a first region of material in said high anisotropy magnetic material which forms said post elements that has a low anisotropy relative to said high anisotropy of said magnetic post elements, said first region placed in a corner of each triangularly shaped post element opposite said diagonals in said third and fourth directions.

4,497,546

WIDE-FIELD EYEPIECE

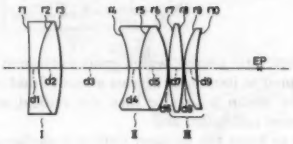
Yuko Kobayashi, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,278

Claims priority, application Japan, Apr. 19, 1982, 57-64068

Int. Cl.³ G02B *9/34, 25/00*

U.S. Cl. 350—410 **6 Claims**



1. A wide-field eyepiece comprising a first, second and third lens components wherein said first lens component is a positive cemented doublet consisting of a negative lens and a positive lens, said second lens component is a negative cemented doublet consisting of a negative lens and a positive lens, and said third lens component comprises at least two lens elements and has positive refractive power as a whole, the lens element located on the eye side in said third lens component being a positive meniscus lens arranged to be concave toward the eye side, said wide-field eyepiece being arranged to fulfill the following conditions:

(1) $n_6 \geqq 1.75$

(2) $(n_3 - n_4) \geqq 0.1$

(3) $-0.8f \geqq r_4 \geqq -1.2f$

(4) $52 \geqq \nu_2 \geqq 36$

wherein reference symbols n_3 and n_4 respectively represent refractive indices of respective lens elements constituting the second lens component, reference symbol n_6 represents the refractive index of the lens element arranged on the eye side in the third lens component, reference symbol r_4 represents the radius of curvature of the lens surface located on the first lens component side in the second lens component, reference symbol ν_2 represents Abbe's number of the lens element arranged on the second lens component side in the first lens component, and reference symbol f represents the focal length of the lens system as a whole.

4,497,547

ZOOM LENS

Kiyoshi Hayashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 367,807

Claims priority, application Japan, Apr. 24, 1981, 56/61469

Int. Cl.³ G02B *9/64, 15/18*

U.S. Cl. 350—427 **6 Claims**

1. A zoom lens comprising, in succession from the object side, a convergent first lens unit (G_1) stationary during zooming and moved on the optical axis during focusing, a divergent second lens unit (G_2) which is a variator moved on the optical axis during zooming, a divergent third lens unit (G_3) which is a compensator moved on the optical axis during zooming, and a convergent fourth lens unit (G_4) as a master lens system stationary during zooming, characterized in that said fourth lens unit (G_4) comprises, in succession from the object side, a convergent first master lens unit (G_{41}), a convergent second master lens unit (G_{42}) spaced from said first master lens unit (G_{41}) with an air space therebetween, and a divergent third master lens unit (G_{43}) spaced from said second master lens unit (G_{42}) with an air space therebetween, said first master lens unit (G_{41}) having, in succession from the object side, a positive lens, a positive and a negative lens cemented to each other in a cemented concave toward the object side, a positive lens having its surface of greater curvature facing the object side, and a negative lens having its surface of greater curvature facing the image side, said second master lens unit (G_{42}) having the biconvex lens, said third master lens unit (G_{43}) having a negative lens and a positive lens, said zoom lens satisfying the following conditions:

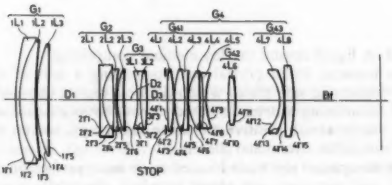
$$1.70 < |f_{42}/f(_4r_9)| < 4.20 \quad (1)$$

$$0.05f_{42} < {}_4d_9 < 0.13f_{42} \quad (2)$$

$$-0.2 < ({}_4r_{11} + {}_4r_{10})/({}_4r_{11} - {}_4r_{10}) < 0.1 \quad (3)$$

$$0.75 < f(_4r_9)/f(_4r_{12}) < 1.15 \quad (4)$$

$$0.65f(_4r_{12}) < {}_4d_9 + n({}_4L_6) \cdot {}_4d_{10} + {}_4d_{11} < 0.85f(_4r_{12}) \quad (5)$$



$$n({}_4L_3) - n({}_4L_2) \geqq 0.18 \quad (6)$$

$$0.8 < |f({}_4L_4)/f({}_4L_5)| < 1.35 \quad (7)$$

$$n({}_4L_5) - n({}_4L_4) \geqq 0.23 \quad (8)$$

where

${}_4r_j$: radius of curvature of the jth surface from the object side in the ith lens unit

${}_4d_j$: spacing of the jth lens surface from the object side in the ith lens unit

$n({}_iL_j)$: refractive index for d-line of the jth lens from the object side in the ith lens unit

f_{42}: focal length of the second master lens unit G_{42}

$f({}_ir_j)$: focal length of the jth surface from the object side in the ith lens unit

$f({}_iL_j)$: focal length of the jth lens from the object side in the ith lens unit.

4,497,548

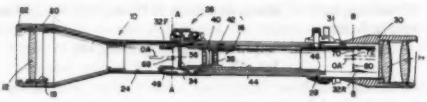
VARIABLE-POWER RIFLESCOPE WITH RANGE-COMPENSATING RETICLE AND A FIELD STOP DIAPHRAM CENTERED OFF THE OPTICAL AXIS

Donald J. Burris, Greeley, Colo., assignor to Burris Company, Greeley, Colo.

Continuation of Ser. No. 213,335, Dec. 5, 1980, abandoned. This application Dec. 13, 1982, Ser. No. 449,400

Int. Cl.³ G02B *23/00*

U.S. Cl. 350—560 **4 Claims**



1. In a variable-power riflescope having an optical axis defined by an optical system including objective lens means at

the front end thereof adapted to reproduce an inverted image of a distant real object in a first image plane spaced rearwardly thereof, erector lens means mounted for axial movement to the rear of the first image plane adapted to reproduce an erect image of the real object in a second image plane spaced therebehind at varying degrees of magnification, eyepiece lens means located behind the second image plane adapted to focus upon the erect image reproduced therein, and means connected to the erector lens means operative upon actuation to shift the axial positions thereof so as to vary the degree of image magnification, the improvement which comprises: first reticle means mounted in the first image plane carrying first aiming indicia visible through the eyepiece lens means, second reticle means mounted in the second image plane carrying second aiming indicia visible through the eyepiece lens means in superimposed relation upon the first aiming indicia, said first and second aiming indicia cooperating when thus superimposed to define a first aiming reference in substantial horizontal alignment with a point of bullet impact at a first preselected range, point-definiing means defining a point located in the second image plane displaced vertically with respect to the optical axis, said point-defining means being responsive to increases in the degree of image magnification so as to open a gap between it and the first aiming reference, and said point-defining means when so moved defining a second aiming reference in vertically-spaced relation to said first aiming reference and in substantial horizontal alignment with a point of bullet impact at a different range, and means in said second image plane defining a field stop diaphragm with said point-defining means at the center thereof.

4,497,549

COLLAPSIBLE LENS SHADE

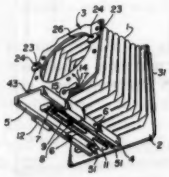
Carl Yurdin, Port Washington, and Carmel S. Monti, Deer Park, both of N.Y., assignors to Photographic Peripherals, Inc., Dexter, Mich.

Division of Ser. No. 104,974, Dec. 18, 1979, abandoned, which is a division of Ser. No. 892,204, Mar. 31, 1978, Pat. No. 4,205,895. This application Jan. 21, 1983, Ser. No. 460,027

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ G02B *7/22*

U.S. Cl. 350—581 **19 Claims**



1. A collapsible, adjustable lens shade external to a lens of a camera and for removable attachment to the front of said lens, comprising:

a front member;

a rear member;

means coupled to said rear member for removably coupling said rear member to a lens;

a foldable shade means connected between said front member and said rear member;

an elongated track means including; a first track member fixedly connected to and extending from said front member; and an elongated second track member pivotally connected at one end thereof to said first track member;

first locking means for selectively locking said second track member in a position extending from and aligned with said first track member;

slide means coupled to said rear member and being slidingly engaged with said track means so as to be slideable along the length of said track means when said second track member is in its extended, aligned, locked position, to vary the position of said rear member along the length of said track means, thereby varying the effective length of said foldable shade means; and

second locking means for fixing said slide means at selected positions along the length of said track means to thereby fix said rear member relative to said track means.

4,497,550

DEVICE FOR PREVENTING THE OBSERVING OBJECTIVE LENS WINDOW OF AN ENDOSCOPE FROM COLLECTING MOISTURE

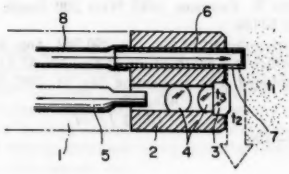
Teruo Ouchi; Kiyoshi Chikashige, both of Saitama, and Hirohisa Ueda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Continuation of Ser. No. 132,713, Mar. 21, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 360,086

Claims priority, application Japan, Apr. 23, 1979, 54/54984[U]

Int. Cl.³ A61B *1/00*; F15B *1/00*

U.S. Cl. 350—584 **6 Claims**



1. A device for preventing the observing objective lens window of an endoscope from collecting moisture comprising: an air source; means for providing a small flow of air over the front surface of said observing objective lens window at all times so as to form a layer of air on the front surface of said observing objective lens window; said air source comprising a control valve having a first tube, a cylinder having openings to said first tube and a piston slidably disposed in said cylinder; said piston having a center longitudinal opening and first and second apertures of different sizes disposed in said piston at positions so that for a first position of said air is allowed to flow along said first tube and for a second position of said piston air is vented to the atmosphere through said center longitudinal openings; a bypass tube around said first tube; and a pressure regulator valve disposed in said bypass tube.

4,497,551

METHOD AND SYSTEM OF AERIAL SURVEYING

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed May 27, 1983, Ser. No. 498,953

Int. Cl.³ G03B *37/00*

U.S. Cl. 354—67 **15 Claims**

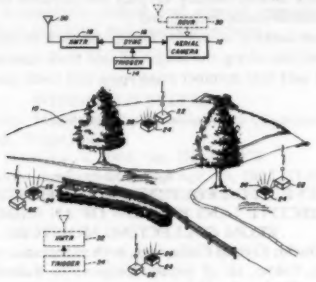
1. A method of aerial surveying comprising the steps of:

providing a remotely-controlled light source located adjacent a predetermined object located on the ground subject to survey or a predetermined object located at the surface of the sea subject to survey;

activating the shutter of an aerial camera aimed at the terrain in which said light source is located;

activating said light source to produce a flash of light at the time said shutter is activated; and

providing a representation of the scene photographed by the aerial camera, whereby the location of said light source



shows up on said representation in the form of a highly visible point of light.

4,497,552

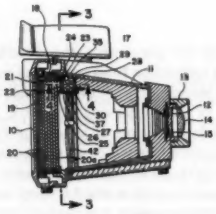
DATA RECORDING SYSTEM FOR CAMERAS

Lowell C. Howard, 2249 King St., Salt Lake City, Utah 84109, and Charles K. Peterson, 1483 West 300 South, Salt Lake City, Utah 84104

Continuation-in-part of Ser. No. 290,362, Aug. 5, 1981, abandoned, which is a continuation of Ser. No. 87,873, Oct. 24, 1979, abandoned. This application Jan. 14, 1983, Ser. No. 458,159

Int. Cl.³ G03B *17/24*

U.S. Cl. 354—106 **16 Claims**



1. Apparatus for placing information on film comprising a multisection display means, each section thereof capable of displaying one set of a limited number of characters; means for the user to enter the limited number of characters making up a set of characters to be displayed; interface means for receiving a set of characters entered, storing such characters entered, and supplying signals to the display indicative of the characters entered; means for defining an information area on the film which can contain more than one set of characters; means for illuminating one section of the display so that one set of characters representing the information stored in the interface means is recorded in a portion of the information area of the film; and means for illuminating different sections of the display so that subsequently entered and displayed sets of characters are recorded in different portions of the information area of the film.

4,497,553

SHUTTER MECHANISM

David C. Smart, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 27, 1983, Ser. No. 489,272

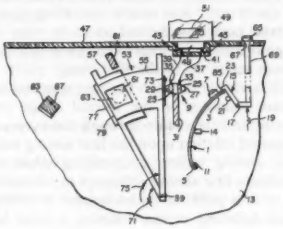
Int. Cl.³ G03B *15/04, 9/16*

U.S. Cl. 354—135 **14 Claims**

1. In photographic camera apparatus of the type wherein flash firing means ignites a chemical flash lamp, and a shutter is fully open at the peak intensity of an ignited flash lamp, the improvement comprising:

an opening blade for opening said shutter and a closing blade for closing said shutter;

means for effecting movement of said opening and closing blades, substantially simultaneously with said firing means



igniting a flash lamp, in a forward direction without opening said shutter; and

return means for first moving said opening blade and then moving said closing blade in a reverse direction to open and close said shutter, whereby initial opening of said shutter is delayed after flash ignition to synchronize its full opening with the peak intensity of an ignited flash lamp.

4,497,554

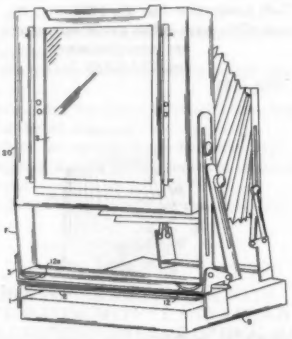
CAMERA FOCUSING MEANS

Morris Hoffman, 19 Grand Ave., Farmingdale, N.Y. 11735

Filed Sep. 28, 1982, Ser. No. 425,471

Int. Cl.³ G03B *17/02*

U.S. Cl. 354—160 **10 Claims**



1. In a camera of the flat bed type having a base, the camera being focused by looking at a ground glass back viewing screen supported on a frame which is movable for focusing:

means to adjust the frame to simultaneously move the frame forward and backward, sideways and rotatably for focusing the camera,

wherein the means to adjust comprises:

a first elongated member fixedly mounted to the base, each end of said member having an aperture extending parallel to the sighting axis of the camera, each aperture having a plurality of indentations extending perpendicular to the sighting axis of the camera,

a second elongated member movably mounted under the first member, each end of the second elongated member having an aperture,

a third elongated member movably mounted on top of the

first member, each end of the third elongated member having an aperture,

first and second screws each extending through one of the apertures of the second and third members and through one of the apertures of the first member, the screws fixedly connecting the second and third members in an assembly which is movable with respect to the first member, the frame being mounted on the third elongated member,

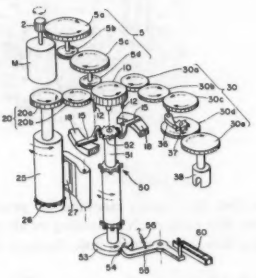
whereby the second and third member assembly and the frame may be moved simultaneously forward and backwards, sideways and rotatably to focus the camera.

4,497,555

MOTOR-DRIVEN FILM WINDING MECHANISM

Kazuhiro Akiyama, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Nov. 26, 1982, Ser. No. 444,702
Claims priority, application Japan, Nov. 26, 1981, 56-189822
Int. Cl.[3] G03B *1/12, 1/24*
U.S. Cl. 354—173.1 **5 Claims**



1. A motor-driven film winding mechanism for a photographic camera, comprising:

a driving motor;

a driving force transmission;

a take-up spool driven by said driving motor through said driving force transmission for winding up a film on the spool;

a sprocket drum having a plurality of sprockets on its periphery which are engageable with film perforations; and

means for releasably connecting said sprocket drum to said driving force transmission in dependence on the speed of movement of said sprocket drum relative to the speed of movement of said driving force transmission, said releasably connecting means releasing from said driving force transmission said sprocket drum when the speed of movement of said sprocket drum is greater than that of said driving force transmission.

4,497,556

PHOTOGRAPHIC STILL CAMERA

Evan A. Edwards, 2 Prospect Hill Rd., Pittsford, N.Y. 14534

Filed Apr. 25, 1983, Ser. No. 488,272
Int. Cl.[3] G03B *1/10, 17/26*
U.S. Cl. 354—212 **11 Claims**

1. A photographic still camera arranged for using a film system comprising:

a. a paper backed film strip wound in a supply coil;

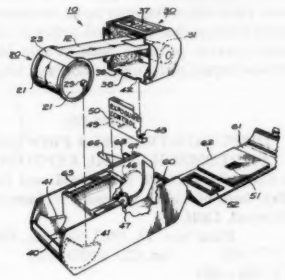
b. a leading end of a paper backing for said film strip being attached to a take-up spindle in a take-up container that is variably separable from said supply coil;

c. said supply coil being held between flanges having outwardly extending pins eccentric to the supply coil axis; and

d. said take-up container having a gear on said take-up spindle;

said camera comprising:

1. a supply recess configured for receiving said supply coil;
2. a take-up recess configured for receiving said take-up container;
3. a camera gear in said take-up recess arranged for meshing with said gear on said take-up spindle;
4. means for rotating said camera gear one revolution for each film advance;



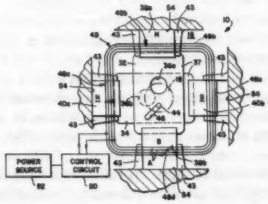
5. opposite sides of said supply recess having ledges arranged for engaging said eccentric pins to orient said supply coil, said ledges being configured for enabling said supply coil to roll back to take up any excess initial paper backing extending between said supply coil and said take-up container when said film system is loaded into said camera; and
6. said ledges and said supply recess being arranged for holding said flanges in position for rotationally unwinding said supply coil relative to said flanges as said film strip advances through said camera.

4,497,557

ELECTROMAGNETIC SHUTTER MECHANISM

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 25, 1982, Ser. No. 392,315
Int. Cl.[3] G03B *9/14*
U.S. Cl. 354—234.1 **4 Claims**



1. In a shutter mechanism for controlling the unblocking and blocking of an opening through which light passes along a given path comprising: a first group of shutter blade assemblies; means for mounting the shutter blade assemblies so that each is movable between unblocking and blocking conditions and each is generally parallel to a given plane, said blade assemblies being oriented with respect to each other so that when said blade assemblies are in their blocking condition, the light opening is blocked, and when in their unblocking condition the light opening is at least partially open; and means operable for driving said blade assemblies along respective

paths between said unblocking and blocking conditions, the improvement wherein;

each of said blade assemblies includes at least a permanent magnet having its field extending generally transverse to the given plane;

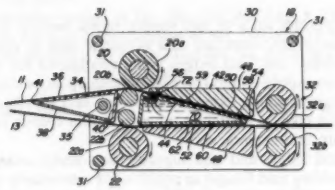
said operable driving means includes a single energizeable coil arrangement having active conductor portions generally parallel to the given plane, respective ones of said active portions are juxtaposed in respective ones of the fields of said magnets and are generally normal to the path of movement of respective ones of said blade assemblies; said active conductor portions of said coil arrangement and permanent magnets being arranged with respect to each other so that when said active portions are energized with reverse polarity, each of said blade assemblies is driven between the unblocking and blocking conditions.

4,497,558

DIFFUSION-TRANSFER PROCESSOR FOR PHOTOMECHANICAL REPRODUCTIONS

Bruce Cooperberg, North Hollywood, and Gene E. Peck, Sun Valley, both of Calif., assignors to Insta-Print, Inc., North Hollywood, Calif.

Filed Nov. 14, 1983, Ser. No. 550,790
Int. Cl.³ G03D *9/00*
U.S. Cl. 354—303 **11 Claims**



1. An improved diffusion-transfer processor for photomechanical reproduction of artwork and like mediums, comprising:

a first upper pair of transport rollers positioned in parallel engagement with each other, and adapted to receive and transport a first medium rearwardly thereof;

a second lower pair of transport rollers positioned in parallel engagement with each other, and spaced below said first pair of transport rollers, said second pair of rollers being adapted to separately receive and transport rearwardly a second medium below said first medium;

means for continuously supplying an activator solution so as to bathe said mediums in said solution, as said mediums are transported rearwardly;

a third pair of rollers defining press rollers positioned rearwardly of said supply means, whereby said mediums are simultaneously received by said rollers, so as to press said mediums in direct contact with each other; and

drive means coupled to at least one of said rollers, whereby all of said rollers are operably interconnected so as to rotate together in a synchronized relationship with respect to each pair of rollers, and to each roller of each pair, allowing said mediums to be in selected alignment with each other as they pass through said press rollers;

a pair of oppositely disposed end walls spaced apart and adapted to rotatably support each of said pairs of rollers;

a bath tray positioned under said rollers to catch said activator solution; and

wherein said means for continuously supplying said activator solution comprises; a pump means

a fluid-discharge member connected to said pump means and positioned rearwardly of said first and second transport rollers and forwardly of said press rollers, said discharge member having at least one discharge opening to allow said solution to bathe said mediums as they are transported rearwardly; and

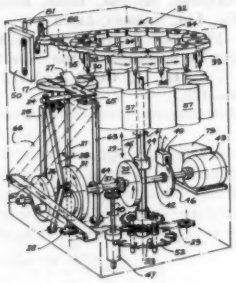
guide means positioned above and below said discharge member to guide said mediums, so as to be simultaneously received in said press rollers as said mediums are being bathed in said solution.

4,497,559

DISC FILM DEVELOPER

Wiltjie Maris, Cromer, and Robert Moran, Narrabeen, both of Australia, assignors to Bianrima Pty. Ltd., Lismore, Australia

Filed Aug. 16, 1983, Ser. No. 523,676
Claims priority, application Australia, Aug. 25, 1982, PF5544
Int. Cl.³ G03D *3/06, 3/08*
U.S. Cl. 354—316 **11 Claims**



1. A film disc developing machine for processing in a processing cycle film units each consisting of an emulsion bearing disc having a hub and a central hole through the hub comprising:

a light tight casing;

means for supporting a film unit with the plane of the disc substantially horizontal;

means for rotatably supporting a plurality of spaced vertically extending spindles arranged around a closed path which passes over said film unit supporting means;

a plurality of containers containing photographic solutions disposed below and spaced along a closed path corresponding to said path of said spindles;

means to move said spindle supporting means so that said spindles move along said path over said film unit supporting means and said containers;

means to continuously rotate said spindles about their axes when in the positions over said photographic solution containers;

a lower free end on each spindle shaped and adapted to be removably insertable into the hole in the hub of the film disc to frictionally retain said film disc therein;

means to cause relative vertical movement at predetermined intervals between said spindle supporting means and said containers and film unit supporting means so that when said spindles and film unit supporting means and containers are moved toward each other said lower end of one of said spindles engages within the hole in a film disc support means and the lower free ends of other of said spindles are immersed in the solutions in said solution containers, and when said spindles and film unit supporting means and containers are moved away from each other a film disc retained on the lower free end of said one spindle is raised off of said film unit support means and the lower free ends of said other of said spindles is withdrawn from said containers;

means for detaching a developed film unit from a spindle which has completed passage through the processing cycle; and

means for controlling and timing the operation of the ma-

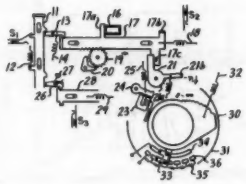
chine so that film units retained on the lower free ends of said spindles are progressively raised off of said film unit supporting means, moved a distance along said path corresponding to the distance between adjacent containers, immersed in the photographic solutions for a predetermined period of time and removed by the detaching means at the end of a processing cycle.

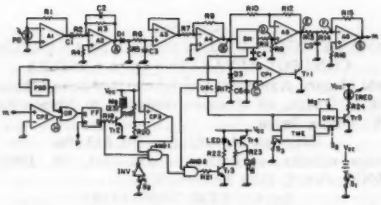
4,497,560

CONTROL CIRCUIT FOR ACTIVE TYPE RANGE FINDER

Shinji Nagaoka, and Koji Sato, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Yotsukaido, Japan

Filed Jan. 10, 1983, Ser. No. 456,789
Claims priority, application Japan, Jan. 11, 1982, 57-2618
Int. Cl.³ G01C *3/08*; G03B *3/10*
U.S. Cl. 354—403 **20 Claims**





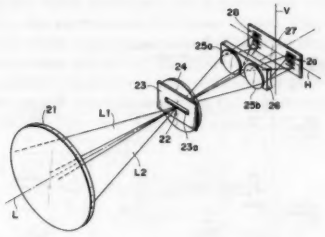
1. In a range finder of the active type in which light projecting means comprised of a light emitting element and a light projecting lens projects light on an object to be photographed and the light reflected from the object is detected and processed to detect the object distance, a control circuit for an active type range finder comprising: a photodetector element disposed to receive the light reflected from the object and produce a photoelectric output signal proportional to the amount of received light, a light shielding member for scanning over the surface of the photodetector element in correlation with the object distance to successively shield successive regions of the photodetector element surface from receiving light, a driving circuit for pulsatively driving said light emitting element, an alternating current amplifier circuit for amplifying the photoelectric output signal from said photodetector element, a detecting circuit and an integrating circuit for converting the variation of the amplified photoelectric output signal into an integrated direct current signal having a negative peak value corresponding to the position of the scanning light shielding member which corresponds to the object distance, a peak detecting circuit for detecting the negative peak value of the direct current signal, and an electromagnet control circuit responsive to the detection of the negative peak value for controlling the focussing of an objective lens.

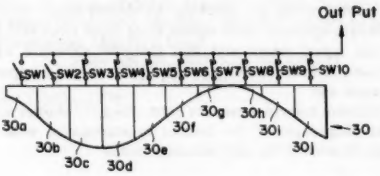
4,497,561

FOCUS DETECTION APPARATUS

Kenji Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 536,735
Claims priority, application Japan, Oct. 4, 1982, 57-174220
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—406 **10 Claims**





1. A focus detection apparatus comprising:
(a) first optical means;
(b) second optical means for reforming a first object image formed on an imaging plane of said first optical means as a plurality of second object images; and
(c) light-receiving means for receiving signals necessary for discriminating a focusing state of the first object image formed on the light-receiving surface of said first optical means in accordance with a positional relationship between said plurality of second object images, said light-receiving means having at least one photoelectric conversion element having a sinusoidally shaped light-receiving surface.

4,497,562

EXPOSURE CONTROL DEVICE FOR FLASH PHOTOGRAPHY

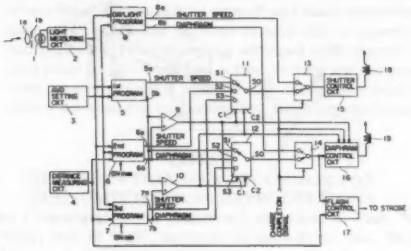
Tokuji Ishida, Daito, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP82/00475, § 371 Date Aug. 24, 1983, § 102(e) Date Aug. 24, 1983
PCT Filed Dec. 23, 1982, Ser. No. 530,574
Claims priority, application Japan, Dec. 25, 1981, 56-210354
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—416 **4 Claims**

1. An exposure control device for a camera comprising:
a light measuring means for generating a light measurement output as a function of the brightness of a scene to be photographed;
a program signal means for generating signals representative of shutter speed and diaphragm aperture value for flash photography in accordance with the light measurement outputs;
a range finding means for generating a distance signal corresponding to the distance between the camera and a target object;

a marginal exposure signal means for generating signals representative of a shutter speed and a diaphragm aperture value in compliance with the distance signal, the light measurement output, and marginal light amount to be emitted from the flash device in use;

a comparing means for comparing the diaphragm aperture value signals from said program signal means and said marginal exposure signal means;



a selecting means for selecting the shutter speed and diaphragm aperture value signals from those from said program signal means and said marginal exposure signal means, in accordance with the output of said comparing means; and

an exposure control means for controlling the shutter speed and diaphragm of the camera in accordance with the signals selected by said selecting means.

4,497,563

PROGRAMMED AUTOMATIC EXPOSURE CONTROL

Kohji Matsushima; Yasutsugu Nakagawa, and Michio Yagi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

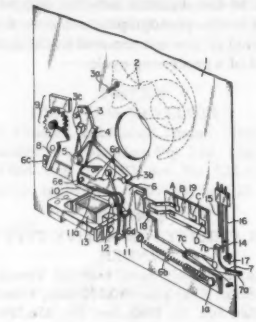
Filed Oct. 18, 1982, Ser. No. 435,112

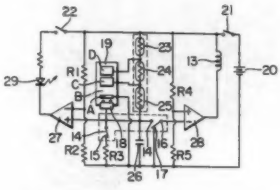
Claims priority, application Japan, Oct. 26, 1981, 56-170219

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—429 **3 Claims**

1. A method for automatic exposure control wherein a shutter element is opened from a minimum aperture to a maximum aperture and is closed in response to a cutoff signal generated from an output signal of a photometry means by the detection of light from a subject, comprising the steps of providing a plurality of photosensitive elements for said photometry means which are selectively operated in stepwise fashion depending upon each aperture corresponding to the opening positions of the shutter element, and initiating an aperture closing operation during the shutter element opening operation in response to the cutoff signal.





4,497,564

EXPOSURE MODE SETTING DEVICE IN AN EXPOSURE CONTROL APPARATUS OF A CAMERA

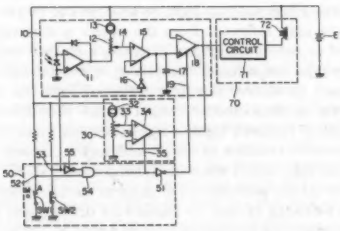
Hiroshi Meguro, Kawasaki; Yuji Okubo, and Sakuji Watanabe, both of Omiya, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 14, 1983, Ser. No. 513,406

Claims priority, application Japan, Jul. 20, 1982, 57-108759[U]; Feb. 8, 1983, 58-17162[U]

Int. Cl.³ G03B *7/089, 17/00*

U.S. Cl. 354—442 **10 Claims**



1. An exposure control apparatus of a camera comprising:

(a) exposure control means adjusted to control the quantity of light applied onto a photosensitive film;

(b) means having means for preparing a photometering output responsive to the quantity of light from an object to be photographed, said means being effective to prepare on the basis of said photometering output a first output used to adjust said exposure control means so that the quantity of light applied onto said film is proper;

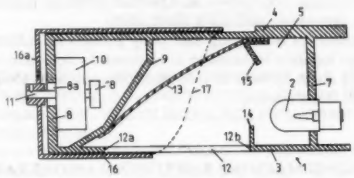
(c) means including means for setting the exposure amount by manual operation, said means being effective to prepare a second output used to adjust said exposure control means so that said set exposure amount is obtained;
(d) selecting means having a first selecting position for making said first output effective and a second selecting position for making said second output effective, in order to adjust said exposure control means; and
(e) operating means operated to store said photometering output, said operating means including change-over means operated when said selecting means is in said second selecting position to thereby act on said selecting means and make said first output instead of said second output effective.

4,497,565

EXPOSURE DEVICE FOR LOCALLY DISCHARGING A PHOTOCONDUCTIVE IMAGING ELEMENT

Hendrik G. J. Rutten, Arcen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Sep. 16, 1982, Ser. No. 419,215
Claims priority, application Netherlands, Sep. 30, 1981, 8104461
Int. Cl.³ G03G *15/04*
U.S. Cl. 355—3 R **8 Claims**



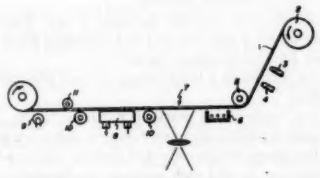
1. An exposure device for homogeneously exposing to light regions of a photoconductive imaging element located outside regions thereof on which images are to be formed, comprising a housing containing a light source and having a window through which light may be passed to a said element and masking means for covering any desired portion of the area of said window, said masking means comprising an opaque member for overlying a portion of said window and having a terminal edge extending obliquely relative to an axis of said window, said opaque member being displaceable transversely relative to said window axis to vary the location of said terminal edge over said window and thus adjust the extent of masking of said area.

4,497,566

CORRECTION OF IMAGE DEFECTS IN PHOTOCONDUCTIVE FILM

Yee S. Ng, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,947
Int. Cl.³ G03G *15/00, 5/06;* B65H *17/32*
U.S. Cl. 355—3 CH **3 Claims**



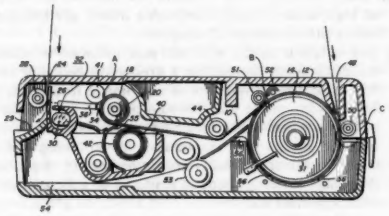
1. In a method of forming an image on a photoconductive roll film having a photoconductive layer deposited on a conductive support, which comprises:
(a) charging said photoconductive film to uniform polarity;
(b) exposing said photoconductive film to actinic radiation, thereby dissipating the charge in the exposed areas and forming a latent electrostatic image; and
(c) developing said image on said photoconductive film by contacting the exposed element with an electrophotographic liquid developer, the improvement comprising:
heating the photoconductive layer of said film while it is under stress relieving tension and prior to charging, to a temperature above Tg, the glass transition, of said photoconductive layer for a time sufficient to relieve core-set and reduce cracking defects in the photoconductive roll film.

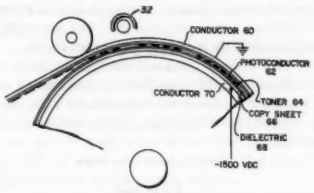
4,497,567

TONER TRANSFERRING METHOD AND APPARATUS

Charles A. Gage, Webster; Timothy T. Blair, Shortsville, and Thomas W. Morgan, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1983, Ser. No. 489,621
Int. Cl.³ G03G *15/16*
U.S. Cl. 355—3 TR **27 Claims**



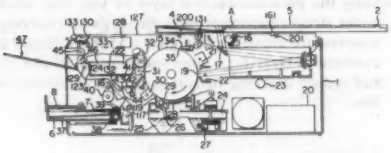


1. Apparatus for transferring charged toner present in image configuration on an insulating layer bearing an electrostatic latent image to a copy substrate, said apparatus comprising an insulating layer on an electrically grounded conductive substrate, means to form a sandwich comprising in sequential order said conductive substrate support for said insulating layer, said insulating layer bearing said electrostatic latent image, the toner image, copy substrate, dielectric layer, and conductive electrode; means for applying a potential to said conductive electrode after said sandwich is formed of a magnitude and potential sufficient to create an electric field to transfer toner from the insulating layer to the copy substrate, means to discharge the electrostatic latent image on said insulating layer before separation of said sandwich, and means to strip said copy substrate from said dielectric layer while said field is applied.

4,497,568
IMAGE FORMATION APPARATUS

Yutaka Komiya, Tokyo; Yoshimasa Kimura, Kawasaki, and Koichi Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,676
Claims priority, application Japan, Dec. 20, 1977, 52-154173
Int. Cl.³ G03G *15/22*
U.S. Cl. 355—14 R **22 Claims**



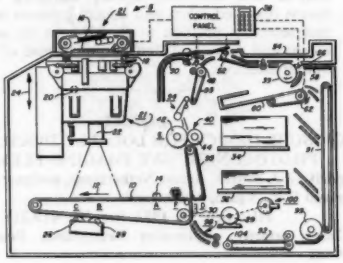
1. An image forming control apparatus, comprising:
a rotatable member;
a plurality of energizable means for forming an image on said rotatable member and for transferring the image to a transfer material, said plurality of energizable means including imaging means and heat transfer means for affecting the temperature of a portion of the apparatus;
switch means for initiating an image forming operation by transmitting an image forming signal;
control means for controlling the energization state of said energizable means to provide a plurality of energizational modes, including;
an image forming mode wherein said member is rotated and at least some of said energizable means are energized to effect the formation of images;
a post-rotation mode wherein said member is rotated to effect cleaning thereof for a predetermined time interval following the termination of said image forming mode;
a first standby mode wherein said member is stationary but at least some of said energizing means including said heat transfer means are maintained in an energized state, whereby the apparatus is maintained ready to proceed to the image forming mode in response to a signal from said switch means; and
a second standby mode which commences upon the termination of the first standby mode if, during the first standby mode, no signal is transmitted by said switch means, wherein the heat transfer means is switched from an energized state to a de-energized state but wherein at least one other energizable means remains activated;
wherein said control means controls the time interval between the actuation of said switch means and activation of said imaging means in accordance with the time of actuation of said switch means, when said switch means is actuated.

4,497,569
COPY PROCESSING SYSTEM FOR A REPRODUCTION MACHINE

Ronald P. Booth, Sr., Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 421,005
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **10 Claims**

1. In a reproduction machine the combination of:
(a) means forming a path along which a copy sheet being processed passes;
(b) transport means for moving said copy sheet along said path,
(c) a plurality of discrete copy sheet monitoring stations disposed in preset locations along said path for monitoring movement of said copy sheet along said path;
(d) control means for enabling said monitoring stations whereby each of said monitoring stations scans said path for said copy sheet, the next one of each of said monitoring stations commencing tolling of a predetermined timed interval in response to detection of said copy sheet by the preceding one of said monitoring stations for said copy sheet to reach said next monitoring station whereby movement of said sheet along said path is monitored;
(e) copy processing information means providing information for processing said copy sheet,

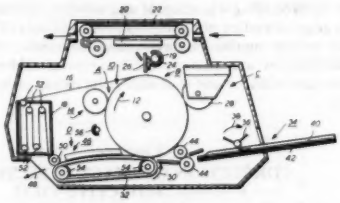


(f) means forming a plurality of locations where said copy processing information may be read to obtain instructions for processing said copy sheet; and
(g) means for advancing said copy processing information from location to location in response to detection of said copy sheet by each of said monitoring stations along said path in succession.

4,497,570
PRINTING MACHINE EMPLOYING AN OPERATOR REPLACEABLE INTERPOSITION WEB AND PHOTOCONDUCTIVE MEMBER

Steven B. Bolte, Rochester; Grace T. Brewington, Fairport; Theodore Davidson, Rochester; Richard F. Koehler, Jr., Webster, and Robert G. Martin, Irondequoit, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 2, 1983, Ser. No. 463,099
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—16 **14 Claims**



1. A printing machine for producing copies, including:
a housing mounted in the printing machine, said housing being operator removable therefrom after a preselected number of copies have been made and operator replaceable with an unused housing;
a photoconductive member mounted in said housing;
a web mounted in said housing and entrained about a portion of said photoconductive member;
means for recording a latent image on said photoconductive member;
means for transporting marking particles to the portion of said web entrained about said photoconductive member so that the latent image recorded thereon attracts the marking particles to said web in image configuration;
means for advancing a copy sheet into contact with the marking particles on said web;

means for heating the marking particles interposed between said web and the copy sheet; and

means for separating the copy sheet from said web after the copy sheet has cooled so that the marking particles remain affixed to the copy sheet.

4,497,571

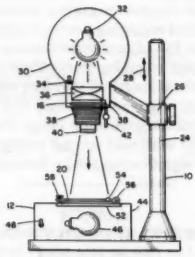
PHOTOGRAPHIC ENLARGEMENTS

John J. Herrmann, 300½ 63rd St. Ocean, Marathon, Fla. 33050

Filed May 31, 1983, Ser. No. 499,203

Int. Cl.³ G03B *27/52, 27/32*

U.S. Cl. 355—40 **6 Claims**



1. Apparatus for superior print enlargement of a photographic image existing in developed negative on a first photographic negative film segment having high grain, comprising:

an enlarger having,

an enlarger holding means for successively, releasably holding in a first location the first photographic negative film segment and thereafter a second photographic negative film segment being unexposed and having low grain,

an enlarger illumination means for projecting light through the first photographic negative film segment while in the first location to produce projected light of the photographic image,

an enlarger housing means for confining the projected light along a desired path,

an enlarger switch means for selectively actuating the illumination means,

lens means along the desired path for focusing the projected light along the path; and

a light box having,

an at least translucent surface,

a light box holding means for successively, releasably holding in a second location on the surface a third photographic negative film segment being unexposed and thereafter the third photographic negative film segment when exposed and with the image developed thereon,

the light box being adapted to be positioned relative to the enlarger for placing the surface along the path and further adapted to be positioned relative to the enlarger lens means for focusing by the enlarger lens means of the projected light onto the photographic negative film segment while in the second location and unexposed, to expose the third photographic negative film segment and thereby produce the photographic image latent thereon, whereby the exposed third segment may be released from the apparatus, the latent image thereon developed thereon and the third photographic negative film segment with the image developed thereon returned to the second location,

light box illumination means, light box housing means and light box switch means for selectively projecting confined light through the surface and the exposed, developed, third photographic negative film segment, while returned to the second location, back along the desired path through the enlarger lens means onto the second, unexposed, low grain, photographic negative film segment to produce the photographic image latent thereon, whereby the second photographic negative film segment may be released from the enlarger, the latent image developed thereon, and the second exposed, developed, low grain photographic negative film segment used to produce print enlargements superior in grain to print enlargements produced directly from the first photographic negative film segment.

4,497,572

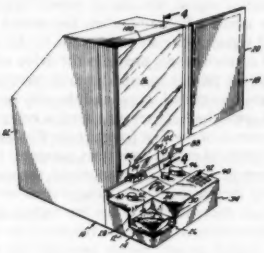
AUTOMATIC X-RAY MICROFILM READER

Ronald G. Beachem, Hopkins, Minn., assignor to Med-Tech Micrographics, Inc., Edina, Minn.

Filed Jan. 10, 1983, Ser. No. 457,060

Int. Cl.³ G03B *21/48, 21/134*

U.S. Cl. 355—45 **15 Claims**



1. An microfilm reader for projecting a magnified image from a web of microfilm located at a film gate onto an image plane, wherein the web has a plurality of image frames and a frame location hole indicating a location of each frame, and wherein the web is contained on a rotatable spindle in a cartridge, the microfilm reader comprising:

a cartridge station for receiving the cartridge;

a rotatable takeup reel;

a guide path for guiding the web between the cartridge station and the takeup reel, and wherein the film gate is located along the guide path between the cartridge station and the takeup reel;

lamp means for providing light;

means for directing the light from the lamp means along an optical path through the web of the film gate and onto the image plane;

a screen located proximate the image plane upon which the magnified images can be viewed;

motor means for providing rotational drive at a speed which is a function of a motor control signal;

drive roller means positioned adjacent the cartridge station for engaging and driving the web in a first direction along the guide path toward the takeup reel, the drive roller means being driven by the motor means;

drive roller positioning means for selectively bringing the drive roller means into engagement with the web in response to a drive roller control signal;

takeup clutch means for providing the rotational drive from the motor means to the takeup reel in response to a takeup clutch control signal to cause movement of the web in the first direction;

cartridge rewind clutch means for providing the rotational drive from the motor means to the spindle of the cartridge in response to a rewind clutch control signal to cause movement of the web in a second direction toward the cartridge;

hole sensor means positioned along the guide path for providing a hole sensor signal in response to each frame location hole in the web;

takeup sensor means for providing a takeup sensor signal indicative of presence of the web in the takeup reel;

user-actuated index means for providing an index signal

which indicates that the user desires the web to be advanced automatically from the cartridge to the takeup reel so that a first frame of the web is located at the film gate;

user-actuated means for providing a desired frame number indicative of a frame which the user desires to be located at the film gate;

user-actuated search means for providing a search signal which indicates that the user desires the web to be moved so that the desired frame is located at the film gate;

user-actuated unload means for providing an unload signal which indicates that the user desires the web to be moved in the second direction so that the web is rewound into the cartridge; and

digital control means for providing the motor control signal, the drive roller control signal, the takeup clutch control signal and the rewind clutch control signal as a function of the hole sensor signal, the takeup sensor signal, the index signal, the desired frame number, the search signal, and the unload signal; wherein in response to the index signal the digital control means provides the drive roller control signal until the takeup sensor signal is received and provides the motor control signal and the takeup clutch control signal until the hole sensor signal is received indicating the presence of the first frame at the film gate; wherein the digital control means maintains a current frame count based upon hole sensor signals received, the current frame count being incremented when the web is moved in one direction and decremented when the web is moved in an opposite direction; wherein in response to the unload signal the digital control means provides the motor control signal and the rewind clutch control signal; and wherein in response to the search signal the digital control means provides either the takeup clutch control signal or the rewind clutch control signal based upon a sign of a difference between the current frame count and the desired frame number and provides the motor control signal as a function of a magnitude of a difference between the current frame number and the desired frame number, so that the web is decelerated as the current frame count approaches the desired frame number and the web is stopped with the desired frame aligned with the film gate by the digital control means discontinuing the clutch control signal and the motor control signal.

4,497,573

VARIABLE MAGNIFICATION OPTICAL APPARATUS

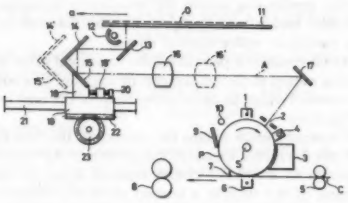
Mitsuhiro Tokuhara, Chigasaki; Akiyoshi Torigai, Machida, and Teruo Morikawa, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,992

Claims priority, application Japan, Sep. 3, 1981, 56-139160; Sep. 3, 1981, 56-139161; Sep. 3, 1981, 56-139162

Int. Cl.³ G03B *27/36*

U.S. Cl. 355—58 **37 Claims**



37. A variable magnification optical apparatus in which at least a first magnification image formation mode and a second magnification image formation mode can be selected, said apparatus including:

illuminating means for illuminating an original;

a photosensitive medium;

an optical system for forming an image of the original on said photosensitive medium, said optical system having a mirror and a lens;

a movable carriage for supporting one of said mirror or lens;

carriage moving means for moving said carriage to change the image formation mode; and

correction means for correcting the distance over which said carriage is moved by said carriage moving means correspondingly to an error of the focal length of said lens, said correction means having

a stopper member for stopping said carriage;

a stopper engaging member mechanically connected to said carriage, said stopper engaging member having at least first and second engaging portions; and

adjusting means for adjusting the spacing between said first and said second engaging portion correspondingly to the error of the focal length of said lens wherein said stopper member being engaged with said first engaging portion during the first magnification image formation mode and being engaged with said second engaging portion during the second magnification image formation mode.

4,497,574

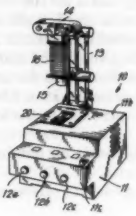
SLIDE SUPPORTING ASSEMBLY FOR COLOR-SLIDE DUPLICATOR

Joseph Tarsia; Alexander S. Ross, and Marina Gertsek, all of Cedar Knolls, N.J., assignors to Kenro Corporation, N.J.

Filed Jun. 13, 1983, Ser. No. 503,818

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—76 **11 Claims**



1. In a color-slide duplicator having a housing containing a light source and including a wall with an opening therein illuminated by light from said source; a slide supporting assembly comprising a carrier plate dimensioned to span said opening and having an aperture, magnetic means for releasably securing said carrier plate to said wall in an adjustable position at which said aperture registers, at least in part, with the illuminated opening in said wall, and quick-release means for positioning a slide to be duplicated on said carrier plate over said aperture and for holding said slide to be duplicated against said carrier plate.

4,497,575

OPTICAL FIBER TEST INSTRUMENT CALIBRATOR

Harald Philipp, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 1, 1982, Ser. No. 438,102

Int. Cl.³ G01N *21/84*; G02B *5/14*

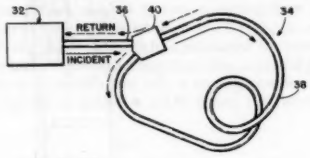
U.S. Cl. 356—73.1 **9 Claims**

1. A calibration device, for calibrating an optical time domain reflectometer of the type comprising a light source for generating pulses of light, a light detector for generating electrical signals in response to light received thereby, an optical coupler for coupling the light source and the light detector to one end of an optical fiber whereby light pulses from the light source are introduced into the optical fiber by way of said one

end and electrical signals are generated by the light detector in response to light leaving the optical fiber by way of said one end, and display means for providing a display of the time relation between light pulses generated by the light source and electrical signals generated by the light detector, the calibration device comprising:

a first optical transmission member having two opposite ends, one of which is connected, in use, to the coupler of the reflectometer to be tested;

optical directional coupling means having at least first, second and third ports and being connected by way of its first port to the other of said two opposite ends of the first optical transmission member, the coupling means directing light received by way of the first port to the second



port but not substantially to the third port, dividing light received by way of the second port and directing it to the third port and to the first port, and directing light received by way of the third port to the second port; and

a second optical transmission member having a known propagation characteristic and having two opposite ends connected respectively to the second and third ports of the coupling means.

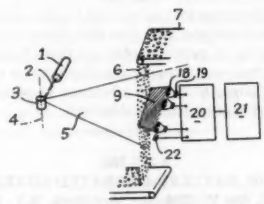
whereby the nature of the display provided by the display means of the reflectometer when the reflectometer is operative and is connected to the calibration device can be utilized, in conjunction with the known propagation characteristic of the second optical transmission member, to calibrate the reflectometer.

4,497,576

ARTICLE ANALYZER APPARATUS BY SILHOUETTE PROJECTION

Jean-Marie Caussignac, Le Perreux sur Marne, and Maurice Leroy, Sauteville les Rouen, both of France, assignors to L'Etat Francais, France

Filed Jan. 8, 1982, Ser. No. 338,155
Claims priority, application France, Jan. 14, 1981, 81 00549
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—335 **3 Claims**



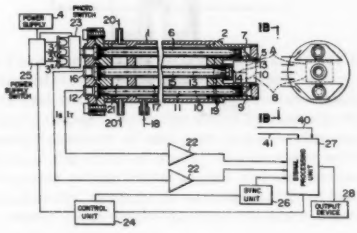
2. Particle analyzer apparatus for analyzing particles of a granular material by the silhouette projection method, said apparatus including in combination a dispensing machine for forming a sheet of said particles falling with virtually the same speed, a fixed laser for producing a beam of light, an optical device for receiving light from said beam and directing the light back towards and through said sheet of particles, means for receiving light which has passed through the sheet of particles to generate signals representing the light received, and a signal processing unit for processing said signals, said optical device being fixed and transforming the received laser beam into a plane divergent sheet beam of light extending towards and traversing the sheet of particles at least over its width and at a substantially right angle before being collected by the receiving device, said receiving device being situated in the plane of said beam over a width which corresponds to the width of said particles, said optical device being constituted by a reflecting cylinder having an axis orthogonal to the direction of the incident laser beam, said receiving device being constituted by a battery of lenses in the focal plane of which are placed analog photo-electric cells in order to generate signals representing the covering power of the particles.

4,497,577

STEAM WETNESS MEASURING APPARATUS

Takeshi Sato, Hitachi; Syogo Tsuji, Katsuta; Kengo Shigeta, Hitachi, and Akira Uenishi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,186
Claims priority, application Japan, Jun. 3, 1981, 56-86242
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **8 Claims**



1. A steam wetness measuring apparatus comprising:

light source means;

a portion defining a measuring space when said apparatus is inserted in a steam flow;

photo-electric converter means;

incident light beam transmitter means for transmitting an incident light beam from said light source means to said measuring space;

scattered light beam transmitter means including a plurality of scattered light beam transmitting members for transmitting to said photo-electric converter means a plurality of scattered light beams of different scattering angles obtained by radiating the incident light beams on said measuring space;

pressure detector means for detecting the pressure of the steam flow and producing an electrical signal associated with said pressure;

temperature detector means for detecting the temperature of the steam flow and producing an electrical signal associated with the temperature; and

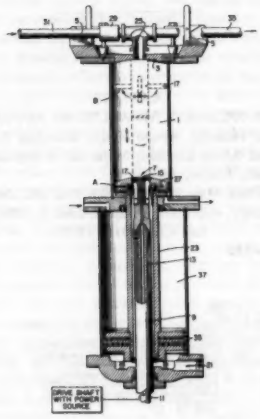
processing means for computing the particle size distribution of water droplets in the steam flow on the basis of the electrical signals produced from said photo-electric converter means in accordance with the intensity of said scattered light beams and computing the steam wetness on the basis of said particle size distribution and said electrical signals produced from said pressure detector means and temperature detector means.

4,497,578

MACHINE FOR MIXING AND INJECTING WATER AND GROUT INTO A ROOF BOLT HOLE

Robert E. Simpson, Spokane, Wash., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 168,815
Int. Cl.[3] B01F *5/04*
U.S. Cl. 366—42 8 Claims



1. An apparatus for mixing two components and then extruding the resultant mixture from the same chamber comprising:

a mixing chamber with a first opening to allow the introduction of one of the components to be mixed, said chamber having means to close the first opening and a second outlet opening to discharge the components after mixing;

a rotatable mixing head having retractable mixing fingers mounted thereon extending into said mixing chamber, said mixing head being mounted on a mixing ram and movable upwardly and downwardly in the chamber;

means for supplying a second component to said mixing chamber, said component being deposited in the chamber near the mixing fingers;

a movable extrusion ram having a ram head at its upper portion, said ram head being mounted in the mixing chamber and normally extending around the mixing head and its retracted fingers when the mixing head in its lower chamber position;

first means for rotating and moving the mixing head and its ram to mix said two components in the mixing chamber; and

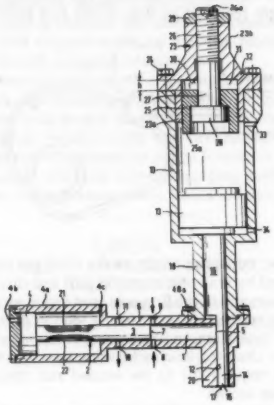
second means for independently moving the extrusion ram and its ram head from the movement of the mixing ram and head to provide for the extrusion of the two mixed components from the mixing chamber out of its second outlet opening.

4,497,579

MIXING HEAD FOR REACTIVE MATERIALS

Horst Schmitz, München, and Wolfgang Krompass, Inning, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 381,740, May 24, 1982, Pat. No. 4,464,056. This application Oct. 18, 1983, Ser. No. 543,123
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 31204821
Int. Cl.[3] B01F *5/04*
U.S. Cl. 366—134 10 Claims



1. A mixing head for two reactive components comprising:

means forming an elongated mixing chamber provided with ports for introducing said components into said mixing chamber, and an outlet opening at one end of said mixing chamber;

a first plunger shiftable in said mixing chamber between a retracted position in which a mixture of said component is formed therein, and a second position wherein said first plunger is advanced to said opening to drive said mixture from said chamber;

means forming an elongated quieting passage communicating with said mixing chamber at said opening, said passage having a discharge end remote from said opening;

a second plunger shiftable in said passage between a retracted position wherein said mixture can be discharged through said passage at said discharge end, and an advanced position wherein said second plunger drives said mixture from said passage; and

a shiftable abutment for said second plunger establishing said reactracted position such that said plunger extends across said opening to partially obstruct flow from said mixing chamber into said passage, and displaceable to enable said second plunger to assume a position in which flow from said outlet is completely unblocked.

4,497,580

TWO-MOTOR, BATTERY-OPERATED MIXER-POURER

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Dec. 16, 1983, Ser. No. 562,165
Int. Cl.[3] B01F *15/02*; B67D *5/48, 5/50*
U.S. Cl. 366—190 5 Claims

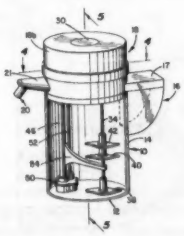
1. A two-motor, battery-operated mixer-pourer comprising:

an open top vessel having a bottom wall and a sidewall, and an open top, handle-shaped filling chute extending outwardly from the upper part of the sidewall and communicating with the interior of the vessel;

a removable housing capping the vessel and the chute and containing a mixer motor and a pump motor, at least one battery, and a manually operable switching arrangement

for turning on only a selected one of said motors at a time, a mixer driveshaft directly driven by the mixer motor and extending downwardly therefrom into the vessel to a point near the vessel's bottom, a bottom mixer blade affixed to the bottom end of the mixer driveshaft to rotate therewith, at least one upper mixer blade affixed to a higher part of the mixer driveshaft to rotate therewith, a spout having a free end extending outwardly of the housing, a pump conduit extending downwardly from the housing and having a top end in fluid flow communication with the spout and a bottom end near the vessel's bottom, a pump secured at the bottom end of the pump conduit for pumping liquid from the vessel up through the conduit and out through the spout, a pump driveshaft directly driven by the pump motor and extending downwardly therefrom to the pump to drive it when the pump motor is on, and a brace secured to and extending from the pump conduit to the mixer driveshaft and having an opening in which the mixer driveshaft is journaled for rotation;

wherein said switching arrangement has a neutral position in which both motors are off, a mixing position in which only the mixer motor is on to rotate the driveshaft and



thereby the mixer blades, and a pumping position in which only the pump motor is on to rotate the pump driveshaft and drive the pump to move liquid from the bottom part of the vessel up through the conduit and out through the spout;

and wherein said housing is manually rotatable relative to the vessel to uncover the filling chute and allow mixing ingredients to be introduced into the vessel without removing the entire housing and wherein, in the alternative, said housing can be completely removed from the vessel by lifting it therefrom, as for cleaning;

whereby mixing ingredients can be introduced into the vessel through the filling chute, when the housing is on the vessel but rotated relative thereto to uncover the chute, or ingredients can be introduced into the vessel with the housing completely removed therefrom, and whereby when the housing caps the vessel and preferably, but not necessarily, covers the chute inlet, the switching arrangement can be manually operated to turn on only the mixer motor to mix the ingredients and, after sufficient mixing, can be operated to turn on only the pump motor, to pump a desired amount of the vessel's contents up through the conduit and out through the spout.

4,497,581

PAINT SHAKER

Herbert L. Miller, Roselle, Ill., assignor to Miller Paint Equipment, Inc., Addison, Ill.

Filed Nov. 15, 1979, Ser. No. 94,634
Int. Cl.³ B01F *9/00*
U.S. Cl. 366—208 **19 Claims**

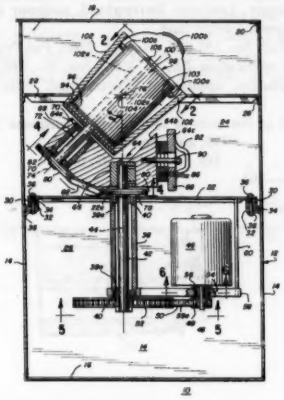
1. Apparatus for agitating flowable material such as paint and the like in a container, comprising:

bucket means having an open upper end for receiving said container of material and mounted for spinning movement about an upwardly sloping spin axis;

yoke means supporting said bucket means for spinning movement thereon, said yoke means mounted for spinning movement about a vertical spin axis angularly devergent with and intersecting said sloping spin axis of said bucket means at a crossover point; and

motor means for driving said bucket means and said yoke means to simultaneously rotate about their respective spin axes;

said bucket means including means for supporting said container in spinning position on said sloping spin axis with the center of gravity of said container and contents main-



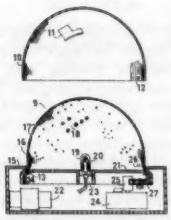
tained continuously spaced below said crossover point and spaced closely radially outwardly of said vertical spin axis of said yoke means, said vertical spin axis extending upwardly through said bucket means continuously during spinning movement of said yoke means in close spaced relation to the center of gravity of a container and contents placed in said bucket means, wherein said bucket means includes rib means on an inside surface of said side wall means for drivingly engaging containers placed on said bucket means.

4,497,582

PLANETARIUM ALARM CLOCK

Abby G. Lipman, 26 Cypress Pl., Sausalito, Calif. 94965, and Herbert L. Levin, 215 Fox Hill Rd., Needham, Mass. 02192

Filed Jul. 27, 1983, Ser. No. 438,043
Int. Cl.³ G04B *19/26*
U.S. Cl. 368—15 **19 Claims**



1. A planetarium comprising:

an opaque hemispherical dome surface provided with patterned groupings of perforations therethrough in configurations resembling the apparent positions of constellations of stars from earth;

a lighting means centrally located within the hemisphere to shine light through the perforations thereby projecting

images of the constellations about a room in which the planetarium is located;

at least one opaque hemispherical mask which fits snugly over the hemispherical dome and which mask is provided with a patterned opening therethrough to allow the lights of one constellation to be projected through the mask at a time;

a timed means for rotating the hemisphere.

4,497,583

FLUID-TIGHT WATCH CASE WITH U-SHAPED BEZEL

Hansjörg Finger, Lengnau, Switzerland, assignor to Firma H. Finger, Berne, Switzerland

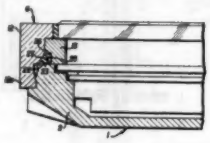
Division of Ser. No. 151,826, May 21, 1980, Pat. No. 4,363,555. This application Jul. 15, 1982, Ser. No. 398,580

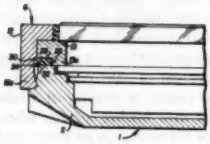
Claims priority, application Switzerland, May 30, 1979, 5041/79

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—291 **3 Claims**





1. A fluid tight watch, comprising:

a case;

a movement;

a dial fixed to said movement, said movement and said dial being contained in said case;

said case comprising:

a back having a peripheral wall which surrounds said movement and extends to a level at least as high as said dial;

a glass;

a bezel; and

an annular gasket;

wherein said bezel comprises a first annular part of L-shaped cross section having a first axially-directed arm and a first radially directed arm, said first axially-directed arm extending around and outside said peripheral wall, said first radially-directed arm extending radially inwardly, with said glass being fitted to said first radially-directed arm; said bezel further comprising a second part of L-shaped cross section having a second axially-directed arm and a second radially-directed arm, said second axially-directed arm extending from said glass to said dial within said peripheral wall, said second radially-directed arm extending outwardly beneath said first radially-directed arm, each of said first and second parts of said bezel comprising at least one contacting surface which is joined to the contacting surface of the other part of said bezel by cementing, brazing, soldering or welding, said first axially-directed arm comprising means for engaging said peripheral wall, said gasket being disposed between said first and second axially-extending arms and compressed against said peripheral wall, said gasket being disposed at a level between the level of said dial and the level of said glass.

4,497,584

WRIST WATCH CASE WITH VULCANIZED GASKET

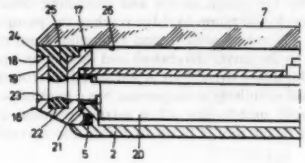
Michel Ratajski, Bienne, Switzerland, assignor to Firma H. Finger, Lengnau, Switzerland

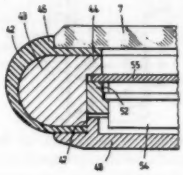
Filed Jun. 7, 1983, Ser. No. 501,825

Claims priority, application Switzerland, Jun. 21, 1982, 3805/82

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—294 **15 Claims**





1. A wrist watch case comprising a glass and an annular case body, said glass being tightly secured to said case body along the periphery thereof, wherein a ring of vulcanizable material is interposed between said glass and said case body, said ring having bonding surfaces vulcanized to a matching surface of each one of said glass and case body, respectively, said case body further including an annular wall for encircling and securing a watch movement having one or more control stems protruding therefrom, said annular wall being traversed by one or more radial holes for receiving said one or more control stems, and said annular wall further having one or more recesses extending between said matching surface of said case body and said one or more radial holes, and said wrist watch case further comprising a mass of vulcanizable material integral with said ring partially filling said one or more recesses to form a gasket in contact with said one or more control stems.

4,497,585

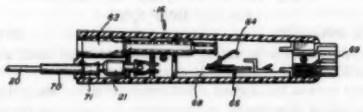
ELECTRONIC THERMOMETER

Seymour Paull, Natick, and Michael J. Marino, Lynn, both of Mass., assignors to Roi Corporation, Wakefield, Mass.

Division of Ser. No. 566,714, Apr. 10, 1975, Pat. No. 4,007,832. This application Dec. 20, 1976, Ser. No. 752,154

Int. Cl.³ G01K *1/14, 7/16*

U.S. Cl. 374—158 **24 Claims**



1. An independent, replaceable probe unit for an electronic

measuring system having a housing with a compartment for receiving said probe unit, comprising:

a probe member including a probe element bearing a sensor device for sensing the parameter to be measured by the system and a cable electrically connected to said sensor device; and

a probe chamber removably mountable in said compartment and having a recess for receiving said probe member, said chamber including contact means interconnected with said cable and disposed to engage corresponding contact means in said compartment for interconnecting said probe member with the electronic measuring system.

4,497,586

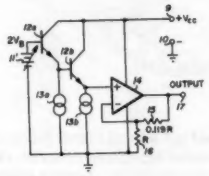
CELSIUS ELECTRONIC THERMOMETER CIRCUIT

Carl T. Nelson, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 17, 1982, Ser. No. 379,203

Int. Cl.³ G01K *7/00*

U.S. Cl. 374—163 **10 Claims**



1. In an electronic thermometer circuit for producing a temperature related voltage that follows a predetermined temperature scale, said circuit comprising:

means for developing a first voltage having a positive temperature coefficient, wherein said first voltage is developed as a function of the base-to-emitter potential difference between a pair of transistors conducting at different emitter current densities;

means for developing a second voltage having a negative temperature coefficient;

means for subtracting said second voltage from said first voltage;

an amplifier responsive to the difference between said first and said second voltages to provide an output voltage related to said difference; and

means for adjusting one of said voltages whereby said amplifier output voltage is zero at the zero reference of said temperature scale, the improvement comprising:

means for obtaining second voltage by combining a plurality of series connected base to emitter voltages of conducting transistors and means for adjusting the gain of said amplifier to provide a desired scale factor whereby said amplifier gain is close to unity.

4,497,587

THREE-PAD JOURNAL BEARING

R. Davis Pine, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1983, Ser. No. 505,749

Int. Cl.³ F16C *17/03*

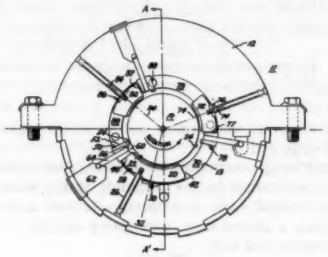
U.S. Cl. 384—117 **11 Claims**

1. An oil lubricated three pad journal bearing for supporting a horizontally disposed, rotatable steam turbine shaft, said bearing including a bearing casing, comprising:

a lower arcuate bearing pad for spacing said shaft away from the bearing casing and for supporting the shaft below the horizontal centerline of the shaft, the radial centerline of said pad being offset with respect to the vertical centerline of the shaft, said lower bearing pad including an arcuately extending pad face operatively spaced from the shaft;

two upper arcuate bearing pads for spacing said shaft away from said casing above the horizontal centerline of the shaft, each upper pad being arcuately smaller than said lower pad and the radial centerline of each upper pad being assymmetrically located with respect to the radial centerline of said lower pad and further with respect to the horizontal centerline of the shaft, each said upper bearing pad respectively including an arcuately extending pad face operatively spaced from the shaft; and

lubricating means for lubricating each pad, said lubricating means including a feed dam respectively associated with each pad, each feed dam located proximate the leading edge of its corresponding pad, each feed dam including a respective damming ridge extending radially inward from said casing, each damming ridge including an arcuately extending face operatively spaced from the shaft wherein



the respective face of each respective damming ridge is operatively radially spaced from the shaft a distance greater than the operative radial spacing of the respective corresponding pad face from the shaft, each said feed dam defining a respective channel between the trailing edge of said respective ridge, the leading edge of said respective corresponding pad and a respective radially inner channel surface of each said respective feed dam, each said respective channel surface operatively spaced from the surface of the shaft, said lubricating means further including supply means for delivering oil into each said channel, thereby creating a reservoir of oil in each said channel such that while rotating the shaft draws oil from said reservoir to form a continuously flowing film of oil across each pad face, said film of oil maintaining the shaft surface in non-wiping contact with each pad face.

4,497,588

PRINTING OR TYPING APPARATUS WITH A ROTATING PLATEN AS WELL AS GUIDE DEVICES FOR THE PAPER

Hans-Werner Volke, Salzkotten; Jürgen Hilkenmeier, Paderborn; Hermann Kohlhage, Paderborn, and Udo Tewes, Paderborn, all of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,436

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214634

Int. Cl.³ B41J *13/10*

U.S. Cl. 400—645.1 **3 Claims**

1. In a printer apparatus of the type having a roller platen rotatably mounted in a housing, a printer carrier movable in a line direction across the platen, and a printer unit mounted on the carrier, the improvement which comprises:

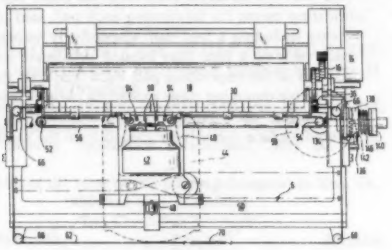
a single flexible strip of material mounted in an essentially closed loop within said housing and having a portion extending along said platen between the platen and the printer unit for holding paper into contact with the platen;

a plurality of at least three spaced roller means mounted in said housing for collectively supporting said strip in said

closed loop configuration and for permitting movement of said strip in said line direction relative to said platen;

means securing said strip to said printer carrier whereby movement of said carrier causes synchronous movement of said strip relative to said platen;

an aperture formed in said strip in the area of said printer



unit to permit said printer unit to access paper through said strip; and

said strip being constructed with spaced apart terminal ends, the combination further including spring means joining said terminal ends, said spring and said strip together creating a closed loop, said spring serving to maintain tension on said strip.

4,497,589

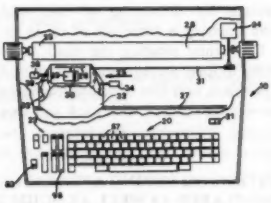
ELECTRONIC TYPEWRITER WITH MEANS FOR POSITIONING THE TYPED MEMBER

Mario Figini, B. Marengo, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Division of Ser. No. 120,781, Feb. 12, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,428

Int. Cl.[3] **B41J** *29/44, 29/48*

U.S. Cl. 400—706 **8 Claims**



1. An electronic typewriter comprising line spacing means actuatable for line spacing a recording sheet;

selection key means for selecting a line space pitch as a set multiple of an elementary line step;

a line space command operable to actuate said line spacing means according to said set multiple of an elementary line step;

a line space memory capable of storing a number of elementary line steps which can be typed on the recording sheet;

a control circuit responsive to each operation of said line space command, to said line space memory and to a selected line space pitch for calculating a number of permitted operations of said line spacing command which can still actuate said line spacing means before the last line to be typed on the recording sheet;

comparing means for comparing said number of permitted operations with a given reference number of lines; and

a display device controlled by said control circuit and by said comparing means to display said number of permitted operations when said number is not more than said reference of lines.

4,497,590

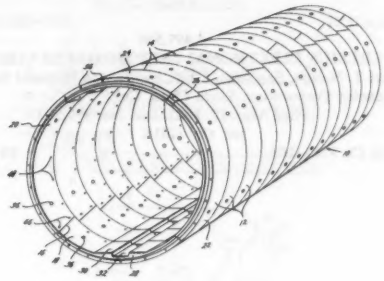
TUNNEL LINING

Arthur P. Chase, Potomac, Md., assignor to CRS Group, Inc., Houston, Tex.

Filed Mar. 8, 1982, Ser. No. 356,133

Int. Cl.[3] **E21D** *11/00*

U.S. Cl. 405—152 **14 Claims**



1. A prefabricated cylindrical tunnel lining comprising

a plurality of annular reinforced concrete rings fastened to each other in longitudinally abutting relationship along a plurality of abutting circumferential joints;

each of said rings comprising a plurality of reinforced concrete arcuate ring segments fastened to each other in circumferentially abutting relationship along a plurality of generally longitudinal joints;

each of said arcuate ring segments having first and second circumferential edges for defining said circumferential joints and first and second generally longitudinal edges for defining said generally longitudinal joints;

said first and second circumferential edges having generally mating stepped annular configurations comprising at least three intersecting stepped edge surfaces, with the circumferential stepped edge on each arcuate ring segment in one ring being configured to mate with the stepped edge of the adjacent arcuate segments of the next longitudinally adjacent ring to provide a generally mating stepped annular configuration for said plurality of circumferential joints;

means for accommodating limited non-circular alignment between said circumferentially abutting ring segments while preserving maximum contact areas between said circumferentially abutting ring segments for structural strength, said means comprising said first and second longitudinal edges having generally mating annular arcuate configurations with the longitudinal arcuate edge on each ring segment being configured to mate with the longitudinal arcuate edge on the next circumferentially adjacent ring segment in abutting relationship to provide a generally mating annular arcuate ring configuration for said plurality of generally longitudinal joints.

4,497,591

ADVANCING MECHANISM AND SYSTEM UTILIZING SAME FOR RAISING AND LOWERING A WORK PLATFORM

Don A. Gillis, 208 N. Western Ave., Wenatchee, Wash. 98801

Filed Sep. 6, 1983, Ser. No. 529,358

Int. Cl.[3] **E02B** *17/08;* **B66F** *1/00*

U.S. Cl. 405—198 **12 Claims**

1. An advancing mechanism, comprising:

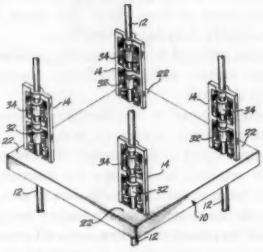
an elongated guide member, including at least one rack extending along a side thereof;

a movable member guided for movement along said guide member;

a pair of spaced apart pinion wheel supports, each carrying a pinion wheel which engages the rack, and each pinion wheel support including an extendible-retractable lock element having an end portion which when the lock element is extended is in locking engagement with tooth portions of the pinion wheel, and when retracted is out of engagement with tooth portions of the pinion wheel; and

a separate extendible-retractable hydraulic cylinder interconnected between each pinion wheel support and the movable member,

whereby the lock element associated with a first one of the pinion wheel supports can be extended into locking engagement with tooth portions of its pinion wheel, to in that manner prevent rotation of such pinion wheel and hold it in position relative to the guide member, while at



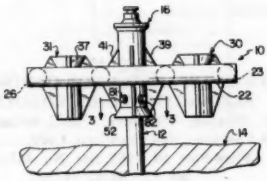
the same time the hydraulic cylinder connected to the first pinion wheel support is extended or retracted to move the movable member in position relative to the first pinion wheel support and the guide member, and at the same time the lock element associated with the pinion wheel carried by the second pinion wheel support is retracted into an unlocked position, allowing its pinion wheel to rotate along the rack carried by the guide member, and the second cylinder is moved to a starting position, so that at the end of the stroke of the first cylinder the second lock element can be advanced to lock its pinion wheel in position relative to the guide member, the first lock element can be retracted to free its pinion wheel from rotation along the rack carried by the guide member, and then the second cylinder can be operated to advance the movable member and the first cylinder can be returned to a start position.

4,497,592

SELF-LEVELLING UNDERWATER STRUCTURE

John E. Lawson, London, England, assignor to Armco Inc., Middletown, Ohio

Filed Dec. 1, 1981, Ser. No. 326,330
Int. Cl.³ E02B *17/00*; E02D *5/54*; E21B *33/047*
U.S. Cl. 405—202 **10 Claims**



1. In an underwater well structure, the combination of an elongated substantially upright support fixed to the floor of the body of water against lateral and vertical movement and projecting upwardly from the floor;

an underwater structure including a levelling and supporting unit having an upper end portion, a lower end and a longitudinal axis,

a pivot device disposed to coact between the upper end portion of the levelling and supporting unit and the upright support to support the underwater structure on the upright support with freedom of pivotal movement about all axes transverse to the upright support,

the levelling and supporting unit being hollow and having transverse dimensions such that the unit surrounds and is spaced outwardly from the upright support at the lower end of the unit and for at least a substantial portion of the length of the unit commencing at the lower end of the unit;

the underwater structure having an even distribution of weight on opposed transverse sides of the longitudinal axis of the levelling and supporting unit;

the underwater structure, when supported on the upright support gravitating to a position in which the longitudinal axis of the unit is vertical whether or not the upright support is vertical; and

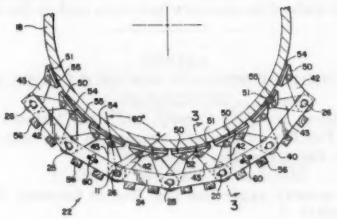
securing means engageable between the levelling and supporting unit and the upright support, in a location spaced substantially from the upper end of the unit, for securing the unit in its vertical position to the upright support.

4,497,593

FLOATING STRUCTURES

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 13, 1982, Ser. No. 434,029
Int. Cl.³ B63B *59/02*; E02B *3/22*; F16F *1/14*
U.S. Cl. 405—212 **8 Claims**



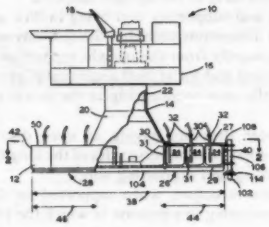
1. A fender system for a floating structure wherein said structure has a deck and a plurality of depending support columns, said fender system having a plurality of vertically spaced horizontally extending rail members, said horizontal rail members are interconnected by a plurality of shafts extending therethrough, torsion spring means are mounted on each of said shafts, each of said spring means having a cylinder mounted on said shafts, a pair of vertically spaced sleeves mounted in concentric relationship on each of said cylinders, an annulus of elastomeric material located between each of said pair of sleeves and said cylinders that are concentrically spaced therefrom, each of said annulus of elastomeric material having an inner surface and an outer surface that are secured to said cylinders and said sleeves respectively providing a yieldable torsion member, an arm member keyed to each of said sleeves forming pairs of arm members, each pair of arm members are off-set relative to the center line of the shaft on which said pair of arm members are located, each of said arm members having a pad thereon for contacting one of said columns, said arm member diverging from said shaft in each pair of said sleeves, and said fender system being mounted on said columns for abutting contact of said pads with said columns.

4,497,594

OFFSHORE STRUCTURE AND METHOD OF SINKING SAME

Derek T. Fern, Gretna, La., assignor to McDermott Incorporated, New Orleans, La.

Filed Sep. 30, 1982, Ser. No. 429,895
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—217 **18 Claims**



1. A method for sinking a structure having a first end portion and a second end portion to the sea bed comprising the steps of: a. ballasting said first end portion of the structure to sink said first end portion to the sea bed while said second end portion is closed to ballast; b. ballasting said second end portion of the structure, after said first end portion is sunk, to sink said second end portion to the sea bed; c. attaching at least one removable buoyancy member to the structure during at least one of steps a and b to maintain stability of the structure; d. attaching at least two piles at the end corresponding to said first end portion of the structure; e. spacing the piles over the length of said end; and f. fixedly positioning the piles vertically so that bottom portions thereof are lower than a skirt on the structure to absorb the force of impact of said first end portion with the sea bed and to maintain the skirt out of contact with the sea bed until both ends of the structure have been sunk to the sea bed.

4,497,595

METHOD OF BONDING ROOFBOLT RODS TO BOLTHOLES

Frank Meyer; Wolfgang Cornely, and Hans Mehesch, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 10, 1983, Ser. No. 456,757
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200574
Int. Cl.³ E21D *20/02, 21/00*
U.S. Cl. 405—261 **11 Claims**

1. In a method of bonding roofbolt rods to boltholes of the type in which the roofbolt rod is pushed under rotating movements into a bolthole filled with an adhesive mass comprising a mix by whose reaction is obtained polyurethane, the improvement comprising using a mass comprised of polyisocyanate-prepolymerides which has been prepared from polyisocyanates and one or more polypropylene-glycols in a molecular weight range between 800 and 5,000, and mixing said means in the bolthole with 1 to 25% by weight (related to the mass) of water and/or polyols serving as the hydroxyl component.

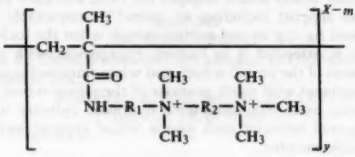
4,497,596

METHOD OF MINIMIZING FINES MIGRATION IN A SUBTERRANEAN FORMATION

John K. Borchardt, and Bill M. Young, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 24, 1983, Ser. No. 478,573
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—263 **20 Claims**

1. A method of stabilizing fines within a permeable formation comprising contacting said fines with an effective amount of a polymer having repeating monomer units of the general formula:



wherein

R_1 is an alkyl group having from about 2 to about 5 carbon atoms, and preferably propyl;

R_2 is an unsubstituted alkyl group having from about 2 to about 6 carbon atoms or a substituted alkyl group having from about 2 to about 6 carbon atoms and containing a hydroxy group or from about 1 to about 3 ether groups, and preferably 2-hydroxypropyl;

X is an anion selected from the group consisting of chlorine, bromine, iodine, sulfate, hydroxyl, methyl sulfate and mixtures thereof;

m is an integer equal to the number of anions required to maintain electronic neutrality; and,

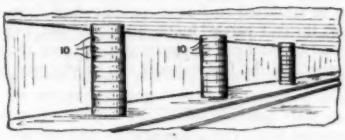
y is an integer equal to the number of monomer units in said polymer required to increase the viscosity of deionized water to from about 250 centipoises to about 10,000 centipoises said viscosity of said polymer being measured by adding 40 grams of the polymer to 60 grams of deionized water to form a solution and measuring said viscosity of said solution on a Brookfield Model LVT viscometer, No. 3 spindle, 6 r.p.m. at about 76° F.

4,497,597

CRIBBING

Nicholas Chlumecky, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 25, 1982, Ser. No. 411,583
Int. Cl.³ E21D *11/00*
U.S. Cl. 405—288 **8 Claims**



1. A yieldable, deformable crib member for use in superimposed layers one upon another as cylindrical hollow cribbing in an underground cavity comprising a portable concrete annulus of greater diameter than height having an unsupported center opening and at least one annular metal retaining member surrounding the outside periphery of said member and firmly attached thereto.

4,497,598

METHOD AND APPARATUS FOR CONTROLLED RATE FEEDING OF FLUIDIZED SOLIDS

William A. Blanton, Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

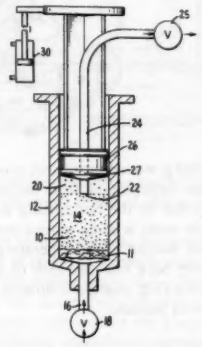
Filed Nov. 19, 1982, Ser. No. 443,117
Int. Cl.³ B65G *53/24*
U.S. Cl. 406—114 **8 Claims**

1. A method of controlling the rate of flow at a known density of fluidized solids being fed into a process which comprises:

confining a bed of solid particles to be fluidized to a lower portion of a chamber;

extending at least one moveable conduit through the upper portion of said chamber having an upper vapor space, said conduit being within a moveable piston member having a sliding peripheral seal and an inlet that extends beyond said piston, said piston member positionable by said conduit at a selectable height above said bed;

flowing a transporting and fluidizing fluid uniformly upwardly through said bed of solid particles in said chamber



defined by said piston member to fluidized particles uniformly over the upper portion of said bed into said vapor space for flow into said conduit inlet;

adjusting the distance said moveable conduit extends into said chamber and the flow rate of said fluid to obtain a desired flow of particles in said fluid as a stream through said inlet; and

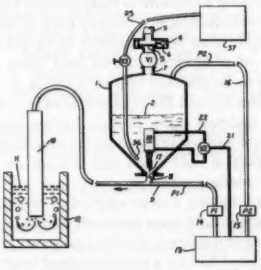
moving said moveable conduit inlet to maintain a substantially constant flow rate of fluidized particles in said stream.

4,497,599

SYSTEM FOR PREVENTING CLOGGING OF THE OUTLET ORIFICE OF A DISPENSER TANK CONTAINING POWDERED REAGENT AND AUXILIARY TANK DISCHARGE MEANS

Victor Benatar, Atlanta, and Walter R. Wilburn, Calhoun, both of Ga., assignors to Advance Engineering, Inc., Decatur, Ga.

Continuation of Ser. No. 246,703, Mar. 23, 1981, abandoned.
This application Apr. 19, 1983, Ser. No. 484,301
Int. Cl.³ B65G *53/46*
U.S. Cl. 406—132 **9 Claims**



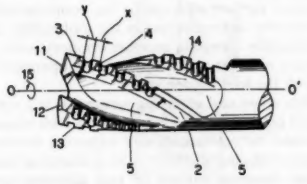
1. In a system for discharging powdered reagent from a dispenser tank under pressure P_2 and having a discharge orifice in communication with a carrier gas conduit under pressure P_1 which is less than pressure P_2 and which is arranged to receive and to convey the powdered reagent to a point of use, an arrangement including a plunger having a diameter less than the diameter of said orifice and being reciprocably movable through said orifice for engaging and crumbling globules of material which are of sufficient size and orientation as to interfere with normal discharge of powdered reagent through said orifice, fluid actuated operating means disposed within said tank and having an operating cylinder and piston which are subjected to operating pressure which is isolated from the pressure P_2 and from the powdered reagent within said dispenser tank for imparting reciprocable movement to said plunger, and a closure element mounted on and movable with said plunger and arranged to engage and to disengage a part of said dispenser tank adjacent to but spaced from said orifice so as effectively to prevent and to allow passage of reagent through said orifice respectively, said closure element being larger than said orifice such that compaction of powdered reagent in close proximity to said orifice may tend to clog said orifice, said closure element being configured to provide space for accommodating powdered reagent which is in close proximity to said orifice thereby to prevent clogging of said orifice by said powdered reagent.

4,497,600

END MILL

Kiyoshi Kishimoto, Osaka, Japan, assignor to Kabushikigaisha Nippon Kogu Seisakusho, Osaka, Japan

Filed Apr. 7, 1983, Ser. No. 482,973
Claims priority, application Japan, Sep. 8, 1982, 57-156148
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—53 **3 Claims**



1. An end mill comprising:

a main body having a tool end and a shank end and rotatable in one direction for performing a milling operation;

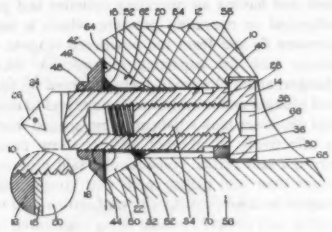
at least three of helical blades extending along said main body from said tool end toward said shank end and having helical flutes therebetween defining said blades, the outer peripheral surfaces of said blades each having a plurality of transverse notches spaced therealong in the direction of the length of said main body and at predetermined intervals with the notches in each blade shifted a distance Z in one longitudinal direction of the main body from the corresponding notches in the blade which precedes said blade in the rotation of said main body during a milling operation, said distance Z being according to formula: $Z=(X+Y/N)$ where N is the number of blades, X is the distance along the blade surface between the notches and Y is the dimensions of the notches along the blade surface, said notches being inclined in the direction from the leading side of the blade during rotation to the trailing side of the blade in a direction opposite to the direction in which the notches are longitudinally shifted relative to the notches in a preceding blade.

4,497,601

CUTTING TOOL

Terence I. Negus, Camborne, England, assignor to Multi Bar Systems Ltd., Cornwall, England

Filed Oct. 12, 1982, Ser. No. 433,661
Int. Cl.³ B23B *29/02*
U.S. Cl. 408—156 **14 Claims**



1. A cutting tool removably mountable for use on a tool holder of a machine tool wherein the tool holder has a bore, a tapered recess extending inwardly from one end of the bore and a first abutment surface at the outer end of said tapered recess, the cutting tool comprising:

an adjustable body member adapted to be axially slidable in the bore of the tool holder having an outer end adjacent the tapered recess end of the bore;

a cutting tip on said outer end of said body member;

an external screw-thread on said body member;

an adjusting member having an internal screw-thread cooperatively engaging said external screw thread on said body member adjacent said outer end thereof;

an abutment surface on said adjusting member adapted to be engageable with the first abutment surface on the tool holder;

a tapered collet supported on said body member between said adjusting member and the tool holder having a tapered surface adapted to be cooperatively engageable with the tapered recess in the tool holder; and

a releasable clamping member cooperatively engaging said body member and adapted to be operatively engageable with the tool holder;

so that when said clamping member is in a released position said cutting tip may be displaced with respect to the tool holder by rotation of said adjusting member, and when said clamping member is in a clamping position for use said abutment surface on said adjusting member is held tightly against the first abutment surface of the tool holder and said tapered collet is compressed inwardly by the tapered recess in said tool holder into clamping engagement with said adjustable body member to rigidly fix said cutting tip with respect to the tool holder.

4,497,602

LOCKING DEVICE

Karen McCarthy, Kirkland, and Charles R. Prochaska, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 4, 1983, Ser. No. 472,066
Int. Cl.³ B60P *7/08*
U.S. Cl. 410—69 **20 Claims**

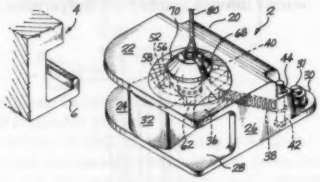
1. Apparatus for restraining movement of a movable body in a given direction along a path out from a set position, comprising:

a restraint member located at one side of the path of the movable body;

mounting means for pivotally mounting the restraint member;

releasable lock means for locking the restraint member into a blocking position in the path of the movable body to prevent unwanted movement of the movable body in said given direction out from its set position; and

biasing means for biasing the restraint member into an unlocked center position in the path of the movable body; said biasing means allowing the restraint member to pivot in one direction out from the path of the movable body in response to the body being moved against said member as



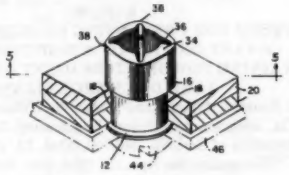
the body is being moved into its set position, and to pivot in the opposite direction out from the path of the movable body in response to the body being moved against said member as the body is being moved out from its set position; and said biasing means operating to pivot the restraint member back into the path of the movable body and into its blocking position following movement of the body into its set position.

4,497,603

PULL THROUGH BLIND RIVET

Donald A. Boucher, and Gilbert D. Boucher, both of Acushnet, Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 28, 1982, Ser. No. 392,705
Int. Cl.³ F16B *13/04, 37/04*
U.S. Cl. 411—34 **2 Claims**



1. A pull through type blind rivet comprising:

a. a rivet having a cylindrical body portion being open at one end and terminating in a flanged head at the opposite end, the flanged head being adapted to be placed against the surface of a workpiece with said body portion being adapted to be inserted into an opening in the workpiece and extend beyond the opposite surface of the workpiece;

b. said cylindrical body portion having an uninterrupted cylindrical surface throughout its longitudinal extent and terminating in said open end having an uninterrupted circular configuration;

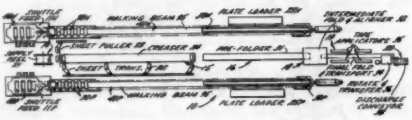
c. a mandrel having a stem adapted to be inserted into said rivet through said open end with said stem terminating in a head portion adapted to abut against said rivet open end;

d. said mandrel having a predetermined head configuration said predetermined head configuration having means to form the open end of the rivet into a plurality of inwardly extending flanges and means to upset said rivet body into a rectangular shape, said flanges being adapted to threadably receive a screw fastener.

4,497,604
APPARATUS AND METHOD FOR SUPPLYING ELECTRODE PLATES IN THE ASSEMBLY OF BATTERY CELL ELEMENTS

Anthony Sabatino, St. Paul, Minn.; Daniel Orlando, New Berlin, Wis., and Douglas J. Olszewski, Inver Grove Heights, Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Aug. 9, 1982, Ser. No. 406,645
Int. Cl.[3] H01M *10/14*
U.S. Cl. 414—131 27 Claims



1. In an apparatus for assembling battery cell elements having a plurality of electrode plates of alternating polarity comprising:

plate feed means including means for containing at least one vertical stack of plates of common polarity and means for successively dispensing single plates from each said stack,

transfer means for successively receiving plates from said dispensing means and moving the plates into a row with the plates uniformly spaced and commonly oriented,

means for simultaneously removing from said transfer means the total number of plates of common polarity required for the assembly of a cell element,

means cyclically operating said plate dispensing means and plate removing means, and

said removing means being operable to remove during each cycle of operation a number of plates at least equal in number to those dispensed during each cycle of operation by said dispensing means.

4,497,605
CENTRIFUGAL PUMP FOR TRANSFERRING SOLID PARTICLES FROM A LOW PRESSURE ZONE INTO A HIGH PRESSURE ZONE

Franciscus H. J. Bukkems, and Bernardus B. Quist, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 4, 1983, Ser. No. 463,707
Claims priority, application United Kingdom, Jun. 30, 1982, 8218858
Int. Cl.[3] B65G *33/20*
U.S. Cl. 414—218 8 Claims

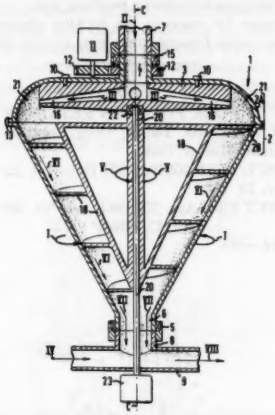
1. A centrifugal pump for transferring solid particles from a low pressure zone into a high pressure zone, said pump comprising:

an inlet and an outlet that are coaxial to a central axis;

a centrifugal rotor and a housing that are rotatable about the central axis;

said rotor centrifugally debouching particles into the interior of the housing; and

screw conveyor transport means arranged for rotation in the housing at a speed different from that of the housing for

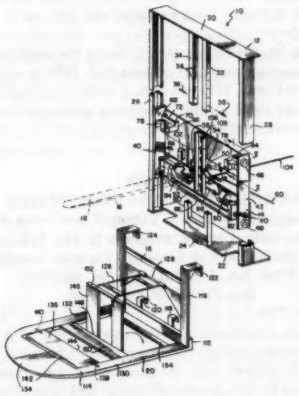


transporting particles over the inner surface of the housing to the outlet.

4,497,606
FORK LIFT TRUCK ATTACHMENT

Lloyd L. Hobson, 312 North East St., Elnora, Ind. 47529

Filed Jul. 19, 1982, Ser. No. 399,334
Int. Cl.[3] B66F *9/06*
U.S. Cl. 414—607 12 Claims



1. An attachment for a lift truck having a vertically movable carriage, the attachment comprising:

a frame,

a carrier slidably engaged within the frame and attachable to the carriage of a lift truck, the carrier having at least one receiving pocket and gate means for substantially closing the receiving pocket, and

a load-supporting element removably supported on the carrier, the load-supporting element including bracket means received in the receiving pocket of the carrier and retained therein by the gate means for maintaining the load-supporting element in operable position on the carrier, the gate means on the carrier comprising

a pivot rod,

an inverted L-shaped locking element supported on the pivot rod,

biasing means for biasing the locking element toward a receiving pocket-closing position, and

an actuator for moving the locking element against the biasing means toward a receiving pocket opening position.

4,497,607

FORK POSITION RETAINER

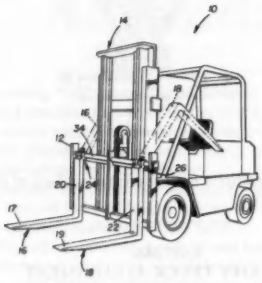
Richard J. Johannson, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US82/00519, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982

PCT Filed Apr. 22, 1982, Ser. No. 386,829

Int. Cl.³ B66F *9/14*

U.S. Cl. 414—664 **9 Claims**



1. A carriage and fork assembly for a load handling vehicle (**10**) comprising

a carriage (**12**) mounted on said load handling vehicle (**10**), said carriage (**12**) having a mounting shaft (**34**);

a fork (**18**) having a load handling end (**21**) and a mounting end (**26**);

means (**28, 30, 40**) for selectively fixing the linear position of said mounting end (**26**) of said fork (**18**) at any position along said shaft (**34**) permitting rotation of said fork (**18**) about said shaft at said selected position and preventing linear movement of said fork at any rotated position.

4,497,608

MONUMENT FOUNDATION DIGGER

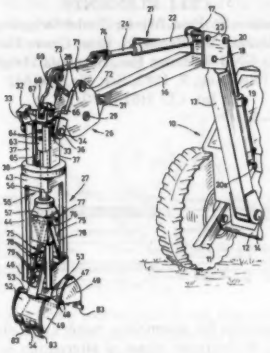
Roy J. P. Sheppard; Howard S. Thornhill, and Mark S. Francis, all of Willowdale, Canada, assignors to The Trustees of The Toronto General Burying Grounds, Toronto, Canada

Filed Jun. 13, 1983, Ser. No. 503,661

Int. Cl.³ E02F *3/44, 3/81*

U.S. Cl. 414—726 **15 Claims**

1. A digger attachment for the dipper stick of a backhoe comprising an attachment frame adapted to be secured to the free end of the dipper stick, an elongated digger frame pivotally connected to the attachment frame and depending downwardly therefrom, a clam shell bucket at the lower end of the digger frame and having two shell sections each having a point of pivotal connection to a lower region of the digger frame about which the sections can swing between a closed position with the shell sections mutually adjacent and an open position with the shells spread apart, an operating shaft extending longitudinally of the digger frame, a connecting link pivotally connected to the operating shaft adjacent an upper end thereof, a rocking lever pivotally connected to the connecting link and to the attachment frame and having a coupling point for coupling with a piston of a cylinder and piston arrangement provided on the dipper stick, whereby rocking motion of the rocking lever alternately drives the connecting link and the operating shaft downwardly and upwardly, and an operating link pivotally connected at one end to each shell section and having its opposite end pivotally connected to the operating shaft whereby upward and downward movement of the operating shaft



swings the shell sections between their open and closed positions.

4,497,609

METHOD AND DEVICE FOR CONTINUOUS SUPPLY OF LUMPS OF MATERIAL TO A SHAFT

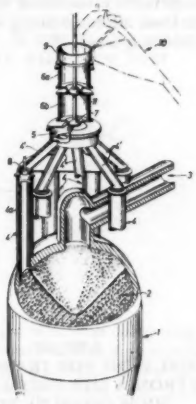
Sven O. Santén, Hofors, Sweden, assignor to SKF Steel Engineering Aktiebolag, Hofors, Sweden

Filed Dec. 7, 1981, Ser. No. 327,936

Claims priority, application Sweden, Mar. 10, 1981, 8101494

Int. Cl.³ F27B *1/20*

U.S. Cl. 414—786 **6 Claims**



1. A method of withdrawing high temperature gas at a central upper portion of a shaft such that said high temperature gas is directed away from the upper periphery of the shaft and toward said central upper portion, said method comprising the steps of:

(a) providing supply means for supplying lump material to the shaft, said supply means having discharge means for discharging said material into said shaft substantially completely around and adjacent to the upper periphery of the shaft;

(b) feeding said material through said supply means into said shaft such that the shaft is continuously filled with said material substantially at least to the height of said discharge means thereby causing the upper surface of said material in said shaft to form an inverted cone extending

downwardly from the periphery of the shaft to the center of the shaft such that the surface of the cone has a downward angle which substantially corresponds to the natural angle of repose of said material;

(c) passing high temperature gas upwardly through the shaft and through the material such that as the gas reaches the region of the inverted cone-shaped upper surface of the material it will tend to flow toward the central portion of the shaft, thereby reducing heat stresses from said high temperature gas on the inner surface of the shaft and the supply means;

(d) passing the high temperature gas upwardly through the inverted cone upper surface of the material centrally disposed gas outlet.

4,497,610

SHROUD ASSEMBLY FOR A GAS TURBINE ENGINE

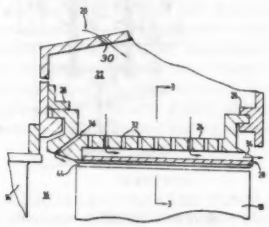
David A. Richardson, Mickleover, and Michael H. Coney, Littleover, both of England, assignors to Rolls-Royce Limited, London, England

Filed Feb. 16, 1983, Ser. No. 467,078

Claims priority, application United Kingdom, Mar. 23, 1982, 8208494

Int. Cl.³ F01D *11/08*

U.S. Cl. 415—116 **6 Claims**



1. A shroud assembly for a gas turbine engine comprising: a housing defined in part by a relatively thick and stiff boundary wall member, said boundary wall member having apertures for through flow of a cooling fluid, said boundary wall member further having a plurality of projections extending away from said housing, and a skin attached to said projections of said boundary wall member to define a plurality of spaces therewith into which said cooling fluid flows from said apertures in said boundary wall member, said skin defining in part an annular passage in the gas turbine engine for through flow of motive gases, said skin comprising an inner relatively thin, flexible metallic layer as compared to said boundary wall member and an outer layer of ceramic coating for contact by said motive gases, said boundary wall member and said skin further defining outlet passages for exhausting said cooling fluid adjacent a downstream end of the shroud assembly.

4,497,611

DEVICE FOR VIBRATION DAMPING IN A GUIDE VANE RING

Herbert Keller, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,286

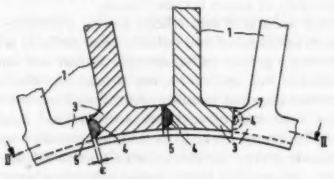
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3211073

Int. Cl.³ F01D *5/16*

U.S. Cl. 415—191 **9 Claims**

1. Vibration damping guide vane ring assembly of an axial flow turbomachine, comprising mutually adjacent guide vanes disposed between first and second spaces on opposite sides of the guide ring vane ring, individual cover plates each being rigidly connected to a respective guide vane forming a cover band of the guide vane ring, said cover plates being frictionally connected to each other at mutual contact surfaces thereof;

said cover plates of said adjacent guide vanes having wedge-shaped recesses formed in said contact surfaces between said cover plates, said recesses defining inclined surfaces of said cover plates extended between a wider and a narrower end of said recesses, and wedge-shaped damping elements being movably inserted in said recesses, said damping elements having surfaces matching said inclined surfaces of said cover plates extended between a wider and a narrower end of said damping elements;



said wider ends of said recesses and said wider ends of said damping elements being in communication with said first space, said narrower ends of said recesses and said narrower ends of said damping elements being in communication with said second space, said first space having a greater pressure than said second space defining an axial pressure difference, each of said wedge-shaped damping elements being pressed into said recesses for exerting a vibration damping pressure on said respective cover plates through said surfaces of said damping elements in response to said axial pressure difference across the guide vane ring during operation of the turbomachine.

4,497,612

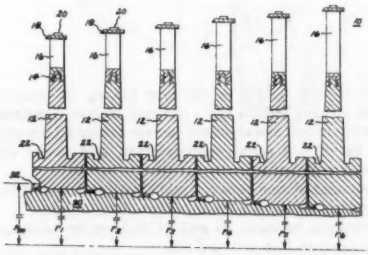
STEAM TURBINE WHEEL ANTIROTATION MEANS

Victor J. Knorowski, Rexford, and Daniel J. Sheflin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 25, 1983, Ser. No. 555,179

Int. Cl.³ F01D *5/06*

U.S. Cl. 416—198 A **13 Claims**



1. In a steam turbine, a rotor comprising:

a multi-stepped shaft rotatably mounted within said steam turbine, each step having a substantially uniform radius over its axial expanse and at least some of the steps having sequentially decreasing radii along an axial segment of said shaft from a maximum radial portion of said shaft;

each of the sequential steps having a step surface which includes a pair of substantially parallel circumferential grooves thereon, the axially fore groove is adjacent the preceeding step having a greater radius and the axially aft groove is axially spaced apart from but proximate to the

next succeeding step having a lesser radius, each step surface having a longitudinal slot thereon axially extending between said aft groove and the axially aft edge of said step, and said slot having a depth less than that of said aft groove;

a plurality of wheels being associated with said sequential steps, at least one wheel of said plurality of wheels being secured to each sequential step by an interference shrink fit between the radially inner surface of the hub section of said one wheel and the corresponding step surface, said interference fit preventing rotation between said wheels and said shaft during normal steam turbine operations, and each wheel including, at its radially outermost portion, a plurality of steam turbine blades;

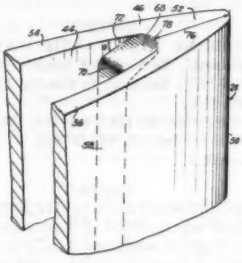
the hub section of said wheels having a shoulder portion at each axial end of said radially inner surface, said shoulder having a greater radial dimension than said inner surface, and said hub section having at least one discrete radially inward disposed member protruding from the shoulder at one axial end of said hub section, said member being axially spaced away from said inner surface by a discrete arcuate groove circumferentially oriented on said shoulder, said member being matingly engageable with the slot proximate said one axial end, and the member's leading face being in contact with the slot's leading side wall such that said member prevents rotation of said wheel relative to said shaft if said interference fit should loosen.

4,497,613

TAPERED CORE EXIT FOR GAS TURBINE BUCKET

Diether E. Carreno, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1983, Ser. No. 461,007
Int. Cl.³ F01D *5/10*
U.S. Cl. 416—228 **6 Claims**



1. A turbine bucket of the type having an aerodynamic section, a shank section and a dovetail section, comprising:

a cavity in said aerodynamic section extending inward from a tip of said aerodynamic section, said cavity defining walls adjacent thereto;

an uncored section between said cavity and at least one of a trailing edge and a leading edge of said bucket;

a transition between an end of said cavity adjacent said uncored section and said tip;

said transition including a curved portion curved toward said uncored section and a ramp portion continuing in said uncored section, said ramp portion including a first end joining said curved portion and a second end exiting said cavity at an extremity point of said ramp portion;

said curved portion beginning within said cavity radially inward of said tip between said walls at a radial distance from said tip; and

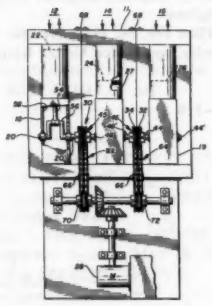
said radial distance and said at least a curved portion being effective to displace a location of a maximum stress concentration produced by at least one vibration mode a sufficient distance from said tip within said cavity from a location of a maximum stress concentration produced by at least one other source of stress concentration that crack initiation in said walls is inhibited.

4,497,614

HELICOPTER TRANSPORTABLE MUD PUMP

Shelby T. Frink, Odessa, Tex., assignor to Oime, Inc., Odessa, Tex.

Filed Mar. 14, 1983, Ser. No. 474,993
Int. Cl.³ F04B *19/00, 39/14;* **F16D** *1/00*
U.S. Cl. 417—238 **5 Claims**



1. In a multi-stage pump assembly separable into three individual stages to facilitate transport thereof from one to another geographical location; wherein each individual stage includes a simplex pump having a crankshaft, a piston connected to said crankshaft and reciprocatingly received within a cylinder, and a crankshaft housing; said crankshaft extends laterally respective to said cylinder and away from said housing so that a prime mover can be connected thereto; the combination with said multi-stage pump assembly of a coupling means by which the adjacent shaft ends of adjacent stages can be connected together to cause the piston of each stage to be arranged in timed relationship respective to the other pistons of the other stages;

said coupling means includes a first and second coupling half which can be attached to adjacent shaft ends of adjacent stages to connect one stage to another stage;

each coupling half has a face formed thereon which confronts the face of the other half of the coupling means, and a drive means conneoting the two coupling halves together so that the shafts remain in the same relative position respective to one another;

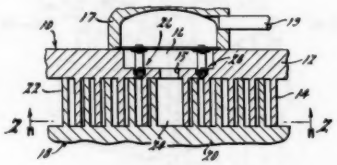
each said coupling half is substantially identical to other of the coupling hales and include means forming indicia thereon, the indicia is located respective to the location of the crank of the crankshaft whereby each piston of each stage is timed 120° respective to one another;

means forming a chain sprocket on each said coupling member; the drive means includes two rows of endless chain arranged to be placed in meshed relationship to a drive sprocket, wherein the drive sprocket includes a row of teeth for meshing with each endless chain; whereby the two rows of chain can be meshed with the coupling member and the drive sprocket and thereby maintain the coupling members properly indexed respective to one another.

4,497,615
SCROLL-TYPE MACHINE

Russell W. Griffith, Troy, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Jul. 25, 1983, Ser. No. 516,773
Int. Cl.³ F04C 18/02, 29/08
U.S. Cl. 417—310 10 Claims



1. A scroll member suitable for constructing a scroll apparatus, comprising:

(a) an end plate having a generally flat sealing surface;

(b) a spiral wrap having a beginning and an end and being attached to said end plate and projecting outwardly from said sealing surface;

(c) a valve port extending through said end plate intermediate of said beginning and said end of said spiral wrap, said port being generally kidney shaped in plan,

one edge of said port lying immediately adjacent said wrap and being similar in shape thereto in plan; and

(d) a pressure responsive valve disposed in said valve port, said valve being generally kidney shaped in plane and substantially flush with said sealing surface.

4,497,616
HYDRAULICALLY-OPERATED PUMP JACK WITH CHAIN DRIVE

Raymond E. Ratell, Jr., Rte. 305, R.D. #4, Warren, Ohio 44481

Filed May 9, 1983, Ser. No. 493,070
Int. Cl.³ F04B 47/04
U.S. Cl. 417—390 20 Claims

1. A pump jack for pumping a liquid such as oil, brine and the like from a well having a casing at its head and a tube on said casing through which the polish rod at the top of a string of sucker rods extends outwardly and upwardly therefrom, said casing providing an exit for the pumped liquid, said pump jack comprising:

a tower disposed upright at the well head, said tower including two elongated vertically-disposed side plates held in facing spaced-apart relation by an elongated vertically-disposed intermediate plate extending crosswise of said side plates,

a hydraulic cylinder having one end secured to said tower near a lower end thereof, said cylinder having a piston rod extending outwardly of the opposite upper end thereof,

rotatable sprocket means supported on a shaft carried near the upper end of said tower,

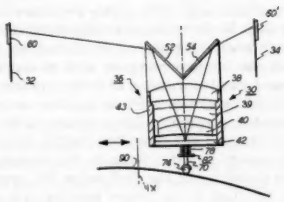
chain means having one end connected for lifting and lowering movement to said piston rod of said cylinder upper end, said chain means extending upwardly and over and around said sprocket means and downwardly therefrom and having its other end connected to an upper portion of said polish rod,

said hydraulic cylinder being constructed and arranged so that the piston therein is driven in a direction toward its said one end to lift said polish rod, with said hydraulic cylinder being vertically-disposed and having its lower end secured to at least certain of said side and intermediate plates and located at one side surface of said intermediate plate, the latter terminating at its upper end short of said rotatable sprocket means and said sprocket means located so that said chain means extends upwardly from its connection to said cylinder adjacent to said one side surface of said intermediate plate and extends downwardly from said sprocket means for connection to said polish rod adjacent to the opposite side surface of said intermediate plate whereby the latter is in position to reenforce against stress generated when said polish rod is raised and lowered.

4,497,617
OPTICAL SYSTEM UTILIZING A VARIABLE FOCAL LENGTH REFLECTOR LENS

Edgar E. Price, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1982, Ser. No. 417,786
Int. Cl.³ G02B 15/14, 17/00
U.S. Cl. 350—425 3 Claims



1. An optical system for projecting an image of an object at an object plane onto an image plane at a plurality of magnifications, said system including a lens assembly having the following elements in alignment along the lens optical axis;

a fixed outer lens element,

at least one movable lens element spaced from said outer element and movable along said optical axis,

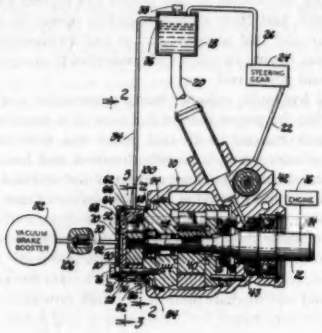
a reflector spaced from said movable element,

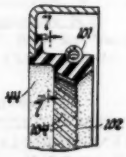
a first and second reflective element positioned proximate to said fixed outer lens element, said first and second reflective elements joined together to form at least a right angle, said optical axis intersecting said angle, said system further including means for moving said lens assembly between said object and image planes, while simultaneously moving said movable lens element along said lens optical axis.

4,497,618
COMBINED VACUUM PUMP AND POWER STEERING PUMP ASSEMBLY

Stanley E. Anderson, Saginaw, and Gary G. Hegler, Chesaning, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 12, 1983, Ser. No. 530,951
Int. Cl.³ F04C 11/00; F04B 23/00, 39/02
U.S. Cl. 418—212 2 Claims





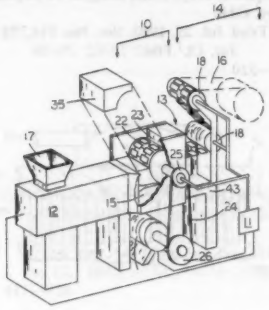
1. In a combined power steering pump and vacuum pump assembly for an automotive vehicle wherein the pumps are arranged in tandem and driven by a common shaft and wherein the power steering pump is adapted to circulate hydraulic fluid in a power steering system while the vacuum pump is adapted to draw and discharge air to create a vacuum to operate one or more devices in the vehicle, an improved lubrication system comprising a vented reservoir connected to receive the discharge of the vacuum pump as well as supply the fluid for circulation by and lubrication of the power steering pump, and hydrodynamic seal means for sealing the vacuum pump from the power steering pump at the periphery of the shaft when the pumps are stopped and providing limited delivery of the fluid from the power steering pump to the vacuum pump axially along the periphery of the shaft when the pumps are running whereby the fluid in the power steering system is prevented from draining into the vacuum pump when stopped and is delivered thereto when running to lubricate same and is thence delivered with the discharge air to the reservoir so that there is no loss of the fluid from the power steering system in lubricating the vacuum pump.

4,497,619
CONTINUOUS MOLDING APPARATUS

Anatoliy Popow, 1810 Craig Rd., St. Louis, Mo. 63141

Filed Jan. 18, 1983, Ser. No. 458,787
Int. Cl.³ B29D 7/00
U.S. Cl. 425—75 12 Claims

1. A continuous molding apparatus comprising at least one endless molding means which is configured to the shape of the molded parts desired, means for injecting molten material to said endless molding means, means for operating said endless molding means in timed relationship with said injection means, and endless sliding and sealing means in continuous sliding and sealing contact with said endless molding means around the

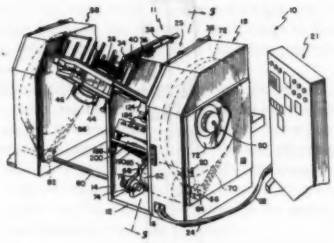


molded part configurations thereof for maintaining a continuous predetermined pressure, temperature, seal and confinement around the molded parts during the molding operation.

4,497,620
SMALL PRESS FOR FORMING SHEET MATERIAL

Edmond N. Dempsey, Marion, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Continuation-in-part of Ser. No. 382,716, May 27, 1982, Pat. No. 4,435,143. This application Jan. 17, 1983, Ser. No. 458,348
Int. Cl.³ B29C 1/00, 17/00
U.S. Cl. 425—145 22 Claims



1. A press for cutting and forming sheet material comprising a frame,

a head mounted for reciprocal movement on the frame between a blank-cutting position at one extreme of the head's reciprocal movement and a blank-forming position at the opposite extreme of the head's reciprocal movement,

cutting means for cutting sheet material and forming means for forming sheet material,

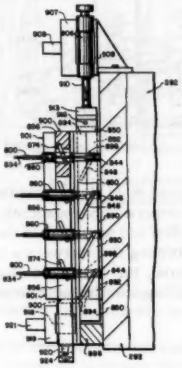
the cutting means being operatively engageable by the head at the blank-cutting position, and the forming means being operatively engageable by the head at the blank-forming position.

4,497,621

APPARATUS FOR SIMULTANEOUSLY DRIVING VALVE MEANS THROUGH CO-INJECTION NOZZLES OF A MULTI-CAVITY INJECTION MOLDING MACHINE

Frederick G. Kudert, Niles; Maurice G. Latreille, Batavia; William A. Tennant, Schaumburg, and Thomas T. Tung, Hoffman Estates, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,561
Int. Cl.[3] B29F *1/03;* B29D *9/00*
U.S. Cl. 425—145 26 Claims



1. Apparatus for simultaneously driving each of a plurality of valve means identically through each of a plurality of co-injection nozzle means mounted in a multi-nozzle, multi-polymer injection molding machine, which comprises,

a plurality of co-injection nozzle means, each adapted to receive valve means, and each having plural passages for feeding plural polymeric materials,

a plurality of identical valve means one only being for each of the co-injection nozzle means and each adapted to operate therewithin to, in each nozzle means, identically initiate, regulate and terminate the flow of the respective, plural polymeric materials therethrough,

drive means adapted for simultaneously and identically driving the plurality of valve means, including common moving means to which each of the valve means is connected in a manner that simultaneously provides identical movements of each of the valve means within the co-injection nozzle means within which it operates, and provides in each nozzle simultaneous identical control over the initiation, regulation and termination of the flow of said plural polymeric materials through each of the co-injection nozzle means, and

control means connected to the common moving means, for moving the common moving means in a desired mode which provides said identical simultaneous movements and said identical simultaneous flow controls.

4,497,622

BLOW PIN ASSEMBLY

Thaddeus J. Grebowiec, Kansas City, Mo., assignor to Brockway-Imco Inc., Richmond, Va.

Filed Aug. 2, 1982, Ser. No. 404,413
Int. Cl.[3] B29C *17/07, 17/12*
U.S. Cl. 425—525 6 Claims

1. An apparatus for providing a rounded, dripless pour lip on a thermoplastic container blow molded from an extruded tube, said apparatus comprising:

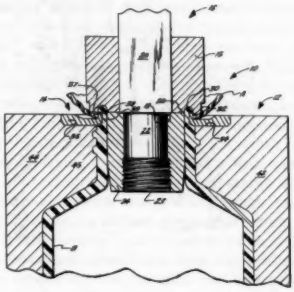
A. a split annular anvil having an upstanding collar said collar being defined by an annular outside wall, a single annular inside wall, which is concentric with said annular outside wall, and a sloping top wall downwardly and outwardly connecting said annular outside wall to said annular inside wall, and said split annular anvil being mounted to a split blow mold, which split blow mold defines a hollow mold space including a neck finish defining portion and which is adapted for the capture of and the blow molding of said extruded tube,

a. said annular outside wall of said split annular anvil and said annular inside wall of said split annular anvil both having a diameter that is less than the diameter of said neck finish defining portion of said blow mold whereby said dripless pour lip on said container has an outside diameter less than the outside diameter of the neck finish portion of said container;

B. a blow pin assembly reciprocally movable along the vertical axis of said hollow mold space, said blow pin assembly comprising,

i. a blow pin stem having a bore for the passage of blow air therethrough,

ii. a hollow blow pin tip mountable to the distal end of said blow pin stem and having an outside diameter less than said inside diameter of said split annular anvil, and



iii. a cutter mounted to said blow pin stem at a position above said blow pin stem and said blow pin tip, said cutter having an annular downwardly facing groove which has,

a. an inside diameter less than said inside diameter of said split annular anvil, and an outside diameter slightly greater than the diameter of said annular outside wall, whereby, said groove at its outside diameter is in neck moil shearing relationship with said annular mold when said blow pin assembly is lowered to position said blow pin tip within the neck finish defining portion of said hollow mold space, and

b. a concave surface which provides a lip forming cavity with said split annular anvil for forge forming said dripless pour lip on the upper portion of said captured extruded tube when said blow pin assembly is lowered to position said blow pin tip within said neck finish defining portion of said hollow mold space, said concave surface being located between said inside diameter and said outside diameter of said groove.

4,497,623

BLOW PIN ASSEMBLY

Joseph J. Beuscher, Independence, Mo., assignor to Brockway-Imco Inc., Richmond, Va.

Filed Aug. 9, 1982, Ser. No. 406,211
Int. Cl.[3] B29C *17/07, 17/12*
U.S. Cl. 425—325 4 Claims

1. An apparatus for providing a rounded, dripless pour lip on a thermoplastic container blow molded from an extruded tube, said apparatus comprising:

A. a split annular anvil,

i. having a single annular vertical wall defining its inside diameter,

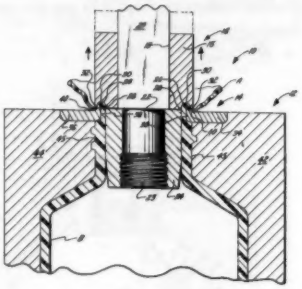
ii. having an annular top wall which slopes downwardly and outwardly from the upper extent of said annular vertical wall,

iii. being mounted to a split blow mold, said split blow mold defining a hollow mold space including a neck finish defining portion and being adapted for the capture of and the blow molding of said extruded tube,

iv. said inside diameter of said annular anvil being smaller than the inside diameter of said neck finish defining portion of said split blow mold to thereby provide a neck finish on said blow molded container having a vertical wall annular recess in the outer wall of said neck finish at the uppermost end thereof;

B. a blow pin assembly reciprocally movable along the vertical axis of said hollow mold space, said blow pin assembly comprising,

i. a blow pin stem having a bore for the passage of blow air therethrough,



ii. a hollow blow pin tip mountable to the distal end of said blow pin stem and having an outside diameter less than said inside diameter of said split annular anvil, and

iii. a cutter mounted to said blow pin stem at a position above said blow pin tip, said cutter having an annular downwardly facing groove which has the shape of an inverted "U" when said groove is viewed in axial section and having,

a. an inside diameter less than and an outside diameter greater than said inside diameter of said split annular anvil but less than the diameter of said neck finish defining portion of said split blow mold, wherein said groove at its outside diameter makes neck moil cutting contact with said annular top wall of said split annular anvil when said blow pin assembly is lowered to position said blow pin tip within the neck finish defining portion of hollow mold space, and

b. a concave surface for forge forming the rounded part of said dripless pour lip on the upper portion of said captured extruded tube, said concave surface being located between said inside diameter and said outside diameter of said groove.

4,497,624

INJECTION MOLDING MACHINE

Philip L. Brun, Dayton, and Stephen A. Bright, Troy, both of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio

Filed Nov. 8, 1982, Ser. No. 439,760

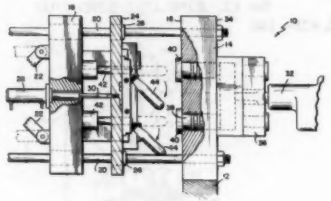
Int. Cl.³ B29C *1/00*; B29F *1/08, 1/022, 1/14*

U.S. Cl. 425—548 **6 Claims**

1. In an injection molding machine comprising a base, a stationary platen fixed with respect to the base having a front face and a back face, a plastics injection unit coupled to the back face of the stationary platen, a movable platen adjacent the front face of the stationary platen, guide means for guiding movement of the movable platen with respect to the stationary platen, and motive means for moving the movable platen, the improvement comprising

at least one mold element-receiving chamber extending from the front face to the back face of the stationary platen,

at least one first mold element substantially wholly received within the at least one chamber, and



at least one second mold element connected to the movable platen and cooperatively engageable with the first mold element, the first and second mold elements each having a surface for forming therebetween a space for receiving a plastics material, the first mold element space forming surface extending into the mold element receiving chamber.

4,497,625

HIGHLY HEATABLE FUEL PREPARING ELEMENT, PARTICULARLY FOR VAPOR BURNERS FED WITH LIQUID FUEL

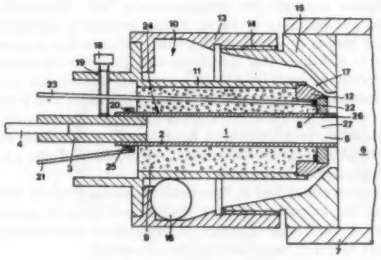
Jorgen H. Petersen; Peter J. M. Clausen, and Hilmar O. Rasmussen, all of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 10, 1983, Ser. No. 550,310

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 3243397

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 **21 Claims**

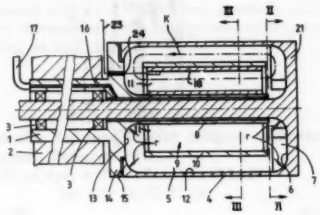


1. A fuel preparing unit for a vapour burner having a combustion chamber, an air supply system for supplying air of combustion to said combustion chamber, and electric power supply means; said fuel preparing unit, comprising, a fuel preparing chamber connected to said power supply means and having at least one outlet aperture opening into said combustion chamber, said fuel preparing chamber having a plurality of ceramic parts including first and second smaller and larger diameter tube parts with said first tube part being pushed into the inlet section of said second tube part, at least one ceramic glow ring part surrounding the outlet end of said second tube and having a close fit therewith, and said parts having approximately equal coefficients of thermal expansion at their abutting areas and being joined by heat treatment.

4,497,626
HEATABLE GODET AND A METHOD OF HEATING A GODET

Kurt Mueller, Zurich, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works, Winterthur, Switzerland

Division of Ser. No. 388,235, Jun. 14, 1982, Pat. No. 4,443,689.
This application Sep. 16, 1983, Ser. No. 533,008
Claims priority, application Switzerland, Jun. 15, 1981, 3914/81
Int. Cl.³ F27D *3/00, 5/00;* **H05B** *5/00*
U.S. Cl. 432—9 **3 Claims**



1. A method of heating a godet having a circumferential wall defining a hollow chamber, said method comprising the steps of

circulating a gaseous medium in a substantially closed free flow path of U-shaped cross-section limited by an annular face side of the godet, said circumferential wall and an opposite annular face side of the hollow chamber to heat said circumferential wall;

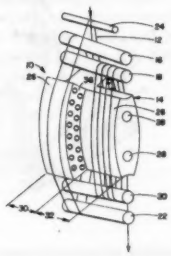
passing the gaseous medium from said flow path circumferentially into and through guide ducts extending between said annular face sides and circumferentially therefrom into said flow path; and

heating the gaseous medium within said guide ducts by means of a heating means in order to transfer substantially the total amount of heat from the heating means to said wall by means of said gaseous medium.

4,497,627
HOT SHOE APPARATUS FOR PREHEATING DRAFTING, AND STABILIZING IN SEQUENCE A RUNNING YARN STRAND

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1984, Ser. No. 582,679
Int. Cl.³ F27B *9/28;* **C21D** *9/52*
U.S. Cl. 432—59 **6 Claims**



1. Apparatus for preheating, drafting, and stabilizing in sequence a running yarn strand, said apparatus comprising:

a heated shoe device having a pair of oppositely facing convex surfaces adapted to be heated and over which said running yarn strand travels in contact therewith to be heated to a predetermined temperature, and means for heating said pair of oppositely facing convex surfaces,

a first freely rotating idler roll and a second freely rotating idler roll spaced one from the other and upstream along a running yarn strand path from said heated shoe device at one end thereof,

a third freely rotating idler roll and a fourth freely rotating idler roll spaced one from the other and downstream along said running yarn strand path from said heated shoe device at the opposite end thereof, and

a fixed draw pin spaced upstream along said running yarn strand path from said first and second freely rotating idler rolls,

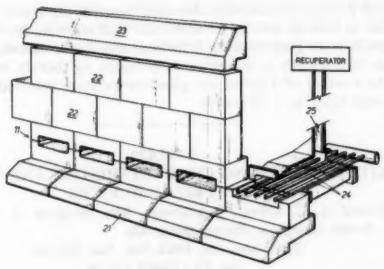
said freely rotating idler rolls and said heated shoe device together defining multiple running yarn strand paths for said running yarn strand as said running yarn strand passes back and forth along said yarn strand paths a predetermined number of times over said first freely rotating idler roll, along one of the pair of oppositely facing convex surfaces of said heated shoe device to said fourth freely rotating idler roll for return over said heated shoe device along the other of said pair of oppositely facing convex surfaces of said heated shoe device, next from said fourth freely rotating idler roll over said heated shoe device to and around said fixed draw pin for drawing said running yarn strand, and then from said draw pin back and forth over said second freely rotating idler roll, heated shoe device, and said third freely rotating idler roll a predetermined number of times before exiting downstream along said running yarn strand path from said apparatus, and

said heated shoe device defining along the width of its pair of oppositely facing convex surfaces a first temperature zone for preheating said running yarn strand in its back and forth travel between said first and fourth freely rotating idler rolls, and a second temperature zone for heat stabilizing said running yarn strand in its back and forth travel between said second and third freely rotating idler rolls at a temperature higher than said first temperature zone.

4,497,628
DESIGN OF TRANSVERSE-BURNER RECUPERATIVE FURNACES

Pierre Blanchet, Boulogne, and Joseph Recasens, Sorgues, both of France, assignors to Societe Europeenne des Produits Refractaires, Courbevoie, France

Filed Mar. 31, 1983, Ser. No. 480,672
Claims priority, application France, Apr. 2, 1982, 82 05723
Int. Cl.³ C03B *5/16;* **C27D** *17/00;* **F23C** *5/08*
U.S. Cl. 432—179 **10 Claims**



1. In a transverse-burner recuperative furnace for melting glass, which comprises a hearth, a vault, tank walls, two piedroits (or casing walls) extending upwardly from the tank walls to the vault and supporting same, each of said piedroits copmrising, above the molten glass level, a row of burner blocks each connected to an air inlet and to at least one fuel

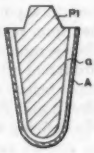
injection pipe, and a recuperator for preheating the air fed to said burner blocks, the improvement wherein said burner blocks have inner apertures each of generally elongate rectangular shape, each said aperture presenting a first block portion of constant cross-section extending from the rear face of the burner block, and each said aperture presenting a second block portion progressively flaring upwards and downwards to the front face of the burner block, said second portion having an angle of flare of not more than 15 degrees, and the cumulated total length of said apertures representing at least 0.65 times the length of said row of burner blocks.

4,497,629

DENTAL IMPLANT AND METHOD OF MAKING SAME

Makoto Ogino; Toshihiko Futami, both of Kawasaki; Michio Kariya, Yokohama; Takeo Ichinura, Tokyo, and Takamitsu Fujiu, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,426
Claims priority, application Japan, Jan. 7, 1982, 57-1198
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—201 **4 Claims**



1. A dental implant comprising a biocompatible metal core and a multi-layer glass coating applied on said core, said dental implant being characterized in that an outer layer of said multi-layer glass coating is formed of a biologically active glass composed of:

SiO_2	35–60 mol %
B_2O_3	0–15
Na_2O	10–30
CaO	5–40
TiO_2	0–2
P_2O_5	0–15
K_2O	0–20
Li_2O	0–10
MgO	0–5
$La_2O_3 + Ta_2O_5 + Y_2O_3$	0–8
F_2	0–15

and having substantially the same thermal expansion coefficient as that of said metal core, and that an inner layer of said multi-layer glass coating is formed of a lower or substantially no biologically active glass as obtained by merely increasing the content of TiO^2 in the glass composition selected for said outer layer to 5–10 mol%.

4,497,630

KIT FOR TEACHING CHARACTERISTICS AND USE OF ELECTRICAL DEVICES

Roland A. G. Oliver, Tuscaloosa, Ala., assignor to Alabama Power Company, Birmingham, Ala.

Filed Mar. 14, 1984, Ser. No. 589,486
Int. Cl.³ G09B *23/18*
U.S. Cl. 434—224 **7 Claims**

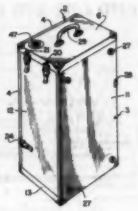
1. In an educational kit for use in teaching the characteristics and use of electrical devices, the combination of

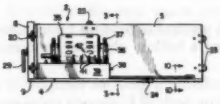
two housing units each comprising side walls and an end wall,

the two housing units being constructed and arranged to be fitted together to define a closed housing with the end walls of the two units disposed at different ends of the housing;

means on one side wall of one of the housing units for mounting a first electrical device on a portion of that side wall adjacent one end thereof with the first electrical device so disposed as to be enclosed within the housing when the two housing units are fitted together;

means on one side wall of the other of the housing units for





mounting a second electrical device on a portion of that side wall adjacent one end thereof with the second electrical device so disposed as to be enclosed within the housing and located at the end of the housing opposite the position occupied by the first electrical device when the two housing units are fitted together; and

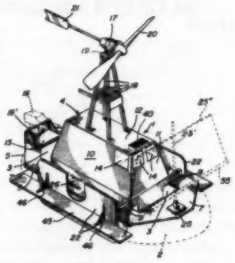
releasable fastener means for securing the two housing units together when the housing units are interfitted to define the housing.

4,497,631

WIND-POWERED WATER-CRAFT

Ernest Belanger, 243 Leblanc St., Chute-aux-Outardes, Province of Quebec, Canada G0H 1C0

Filed Sep. 13, 1982, Ser. No. 416,944
Int. Cl.³ B63H *13/00*
U.S. Cl. 440—8 **3 Claims**



1. A wind-powered water-craft comprising a generally rectangular seaworthy air-inflated dinghy having a generally rectangular longitudinal depression formed by the sides and bottom of said dinghy, said sides defining a peripheral top surface, rigid transverse members extending across said depression and resting on said top surface, a pair of keels secured to the ends of said transverse members and extending downwardly along the sides of said dinghy below said bottom; an electric out-

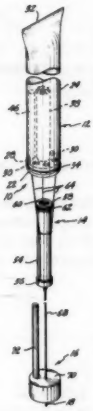
board motor mounted astern of said dinghy; an electric generator for driving said outboard motor, a frame-work secured to said transverse members, upstanding from said dinghy and supporting said generator at the top thereof, a wind-driven propeller axially connected to said generator and adapted to revolve with the wind; said generator being further provided with a horizontal rearwardly-extending vane; and a swivel for said generator, whereby the latter and said propeller can turn towards the direction of the wind; further including two flat, rigid and elongated strips adapted to rest on the top lateral surfaces of said dinghy; a horizontal flat plate adapted to rest both on said strips, being rigidly secured to the latter, and also over the entire said peripheral top surface of the dinghy; said plate being formed with a cut-out portion, generally conforming to the inner dimensions of the dinghy; said rigid transverse members resting on said plate.

4,497,632

INFLATABLE BUOY

Lyle D. Galbraith, Redmond, Wash., assignor to Rocket Research Company, Redmond, Wash.

Filed Apr. 6, 1983, Ser. No. 482,428
Int. Cl.³ B63B *21/00*
U.S. Cl. 441—30 **6 Claims**



1. A buoy assembly adapted to be submerged in a liquid and inflated below the surface of the liquid, comprising:

receptacle means comprising a base having a cavity opening in a first, normally downward direction, an inflatable bag having a mouth surrounding and sealed to the base such that the bag can be inflated to extend in a second, normally upward direction from the base, and means forming a tubular recess projecting from the base in the second direction into the interior of the bag, the base having apertures therein communicating between the cavity and the interior of the bag;

gas generating means comprising a breech and a propellant disposed in the breech, the breech having a first end comprising a nozzle, the propellant being capable of generating gas when ignited, the breech being slidably positioned within the tubular recess with its first end in the second direction prior to ignition of the propellant;

suspension means for coupling the gas generating means to the receptacle means such that the gas generating means may be suspended a predetermined distance below the receptacle means; and,

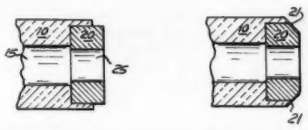
the assembly being adapted such that upon ignition of the propellant, the resulting gas causes the breech to move in the first direction out of the tubular recess and become suspended by the suspension means at said predetermined distance below the receptacle means, such that gas thereafter generated by the gas generating means passes from the nozzle, through an unconfined volume of the liquid in which the assembly is submerged, and into the receptacle means to inflate the bag.

4,497,633

METHOD OF FORMING A TUBULAR ELECTRICAL INSULATOR ASSEMBLY

Helmut P. Meyer, and Gaston R. Isliker, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jul. 8, 1982, Ser. No. 396,198
Int. Cl.³ H01T *13/20*
U.S. Cl. 445—7 **3 Claims**



1. A method of forming a tubular electrical insulator assembly for an igniter of the type having an inner electrode coaxially arranged with an outer tubular electrode and separated by said tubular electrical insulator assembly, said method comprising:

making a recess in one end of the tubular insulator;

placing at least a portion of a tubular semi-conductor into said recess; and

grinding an annular chamfer into the ends of said insulator and said semiconductor to form a conical surface extending across the junction of said insulator and semiconductor.

4,497,634

TANNING MATERIAL CONTAINING BASIC CHROMIC SULFATE AND MERCAPTOACETIC ACID

Giovanni Ghelli, Savona, and Alessandro Barbon, Arluno, both of Italy, assignors to Luigi Stoppani S.p.A., Milan, Italy

Filed Jun. 9, 1983, Ser. No. 502,495
Claims priority, application Italy, Jun. 10, 1982, 21807 A/82
Int. Cl.³ C14C 3/06
U.S. Cl. 8—94.26 2 Claims

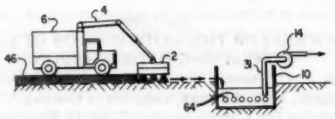
1. Improved tanning material containing basic chromium sulfate and quinone compounds, wherein mercaptoacetic acid is added to the tanning solution to hinder said quinone compounds.

4,497,635

SULFUR REMELTING

Rodger Blackwood, R.R. 1, DeWinton, Alberta, Canada (T0L 0X0)

Filed Dec. 1, 1982, Ser. No. 446,031
Int. Cl.³ E21C 41/14
U.S. Cl. 23—308 S 10 Claims



1. A method of remelting sulfur from the face of solid sulfur block comprising:

generating super-heated liquid sulfur;

spraying the super-heated liquid sulfur at above ambient pressures against the face of the sulfur block to thereby melt and physically remove sulfur from the block face; and

collecting the melted sulfur.

4,497,636

PROCESS FOR REMOVING SULFUR FROM COAL

Tetsuo Aida, Ames; Thomas G. Squires, Gilbert, and Clifford G. Venier, Ames, all of Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 11, 1983, Ser. No. 522,277
Int. Cl.³ C10L 9/06
U.S. Cl. 44—15 R 17 Claims

1. A process of removing divalent organic and inorganic sulfur compounds from carbonaceous material consisting essentially of:

contacting the finely divided carbonaceous material, as a slurry in a slurry liquid, with an electrophyllic oxidant to selectively oxidize the divalent organic and inorganic sulfur compounds to trivalent and tetravalent organic and inorganic sulfur compounds, the oxidant being selected from the group consisting of chlorine, bromine, and hydrogen peroxide,

separating the carbonaceous material containing the oxidized organic and inorganic sulfur compounds from the oxidant;

contacting the carbonaceous material with a molten caustic to dissolve the trivalent and tetravalent organic and inorganic compounds and to neutralize any oxidant remaining in the material, thereby separating the sulfur compounds from the carbonaceous material;

separating the carbonaceous material from the molten caustic; and

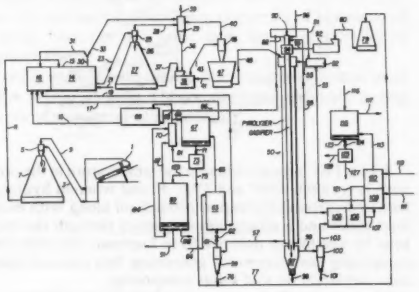
removing any caustic remaining in the carbonaceous material.

4,497,637

THERMOCHEMICAL CONVERSION OF BIOMASS TO SYNGAS VIA AN ENTRAINED PYROLYSIS/GASIFICATION PROCESS

Kenneth R. Purdy, Decatur; Charles W. Gorton, and James A. Knight, Jr., both of Atlanta, all of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Nov. 22, 1982, Ser. No. 443,335
Int. Cl.³ C10J 3/46, 3/48, 3/86
U.S. Cl. 48—111 23 Claims



1. A method of converting biomass raw material to synthesis gas comprising;

drying and sizing said biomass raw material;

introducing said biomass raw material into an entrained pyrolysis chamber;

pyrolyzing said biomass raw material with pyrolysis oil and preheated air and intimately mixing said entrained biomass raw material and pyrolysis oil and air with a hot inert gaseous mixture and conveying the mixture through the entrained pyrolysis chamber, thereby obtaining a product mixture of char, pyrolysis oil and pyrolysis gas, said pyrolysis gas being fed back for use in at least said drying step; and

gasifying said char and pyrolysis oil in the presence of steam and oxygen by conveying the char, oil, steam, and oxygen through a flow reactor, at a temperature sufficient to form said synthesis gas product consisting essentially of carbon monoxide and hydrogen.

15. An apparatus for the conversion of biomass raw material to synthesis gas, comprising:

means for dyring said biomass raw material;

means for grinding said dried biomass raw material;

pyrolyzer means for pyrolyzing said ground biomass raw material at a temperature of 900° to 1600° F. as said material is intimately mixed with an inert carrier gas stream yielding a product mixture of pyrolysis oil, pyrolysis gas and char; means for feeding said pyrolysis gas back for use by at least said drying means; and

gasifier means for gasifying said char in the presence of steam and oxygen to a synthesis gas product consisting essentially of carbon monoxide and hydrogen.

4,497,638

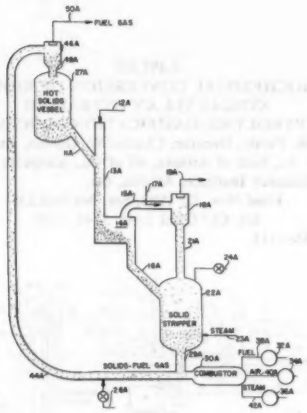
FUEL GAS GENERATION FOR SOLIDS HEATING

Axel R. Johnson, North Babylon, N.Y., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Continuation-in-part of Ser. No. 82,048, Oct. 5, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,491

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **2 Claims**



1. In a TRC process wherein the temperature in the cracking zone is between 1300° and 2500° F. and wherein hydrocarbon feed or hydrodesulfurization residual oil along with entrained inert solids and a diluent gas are passed through the cracking zone for a residence time of 0.05 to 2 seconds, the improvement comprising the process for generating fuel gas and removing coke deposited on said solids comprising:

(a) generating fuel gas having a high CO to CO_2 ratio and a high molal ratio of H_2O to H_2 from fuel, air and steam;

(b) delivering the fuel gas with steam to a tubular transfer line;

(c) delivering particulate solids having coke deposits thereon to the tubular transfer line;

(d) mixing the fuel gas containing the steam and the particulate solids to reach an equilibrium temperature; and

(e) converting the coke deposits from the particulate solids to fuel gas with the heat and the steam in the tubular transfer line.

4,497,639

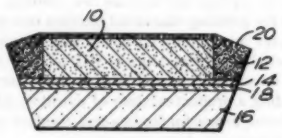
SILICON CARBIDE CUTTING INSERT WITH PRE-PRESSED CORE CENTER PIECE AND SINTERED DIAMOND ENVELOPE

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Dec. 16, 1981, Ser. No. 331,370

Int. Cl.³ C04B *31/16*

U.S. Cl. 51—307 **9 Claims**



1. A process for producing a cutting insert comprising:

preparing a crystal dispersion of superhard crystals selected from the group consisting of diamond and cubic boron nitride crystals, and carbon black in a temporary binder;

preparing a core dispersion of carbon fiber, carbon black and filler in a temporary binder;

pre-pressing said core dispersion at a first pressure to form a pre-pressed core;

enveloping said pre-pressed core with said crystal dispersion;

compacting said crystal dispersion with said pre-pressed core at a second pressure greater than said first pressure to form an intermediate composite;

heating said intermediate composite to allow for the removal of said temporary binder and the infiltration of liquified silicon into said intermediate composite; and

sintering said intermediate composite to produce said cutting insert.

4,497,640

PROCESS FOR THE DEHYDRATION OF GASES CONTAINING HYDROCARBONS

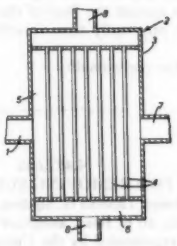
Francois J. C. Fournié, Paris, and Christian J. A. Deleuze, Gradignan, both of France, assignors to Compagnie Francaise de Petroles and Commissariat a l'Energie Atomique, both of Paris, France

Filed Feb. 3, 1984, Ser. No. 576,826

Claims priority, application France, Feb. 4, 1983, 83 01815

Int. Cl.³ B01D *53/22*

U.S. Cl. 55—16 **11 Claims**



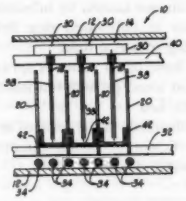
1. A process for the dehydration of a gas containing hydrocarbons, using at least one permeator which comprises a feed compartment having an inlet and a permeation compartment separated from said feed compartment by a membrane of selective permeability, and comprising supplying a gas to be dehydrated under pressure to the inlet of said feed compartment, maintaining said permeation compartment at a lower pressure than said feed compartment, withdrawing a water-enriched gas from said permeation compartment and recovering a water-impoverished gas from said feed compartment, wherein said membrane comprises a bundle of hollow fibres based on polymers, which comprise an active layer and a substrate, having an internal diameter of between 0.1 mm and 0.5 mm, a length of between 0.5 m and 3 m and a thickness of between 0.05 mm and 0.3 mm, the thickness of the active layer alone being less than 1 μm, which have a methane permeability of at least 10^{-5} $cm^3/cm^2.s.cm$ Hg and a water/methane selectivity factor of more than about 100, and which are open at both their longitudinal ends, the exterior of said hollow fibres being located in the feed compartment and the interior of said hollow fibres forming said permeation compartment.

4,497,641

APPARATUS AND METHOD FOR DUST CONTROL BY CONDENSATION ENLARGEMENT

James T. Brown, Jr., and Frank D. Schowengerdt, both of Golden, Colo., assignors to Colorado School of Mines, Golden, Colo.

Filed Nov. 18, 1983, Ser. No. 553,038
Int. Cl.³ B01D 47/06
U.S. Cl. 55—94 10 Claims



1. A method for controlling and enhancing the control of dust-laden air by condensation enlargement, the steps comprising:

heating at least one first plate mounted in a housing;

cooling at least one second plate mounted in a housing and disposed in a spaced relationship to the first plate;

introducing a liquid on the first plate and vaporizing the liquid therefrom;

introducing the dust-laden air into the housing and between the first and second plates;

nucleating droplets and condensing the liquid vapor on dust particles as the vapor diffuses from the first plate to the second plate; and

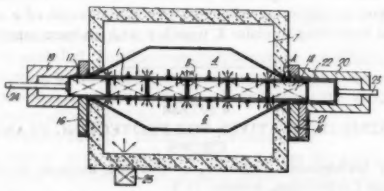
collecting a slurry of the condensed liquid and dust particles in the bottom of the housing and discharging the slurry therefrom.

4,497,642

FILTER ASSEMBLY

Stanley Hackney, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jun. 24, 1983, Ser. No. 507,598
Claims priority, application United Kingdom, Jul. 7, 1982, 8219686
Int. Cl.³ B01D 46/00
U.S. Cl. 55—422 8 Claims



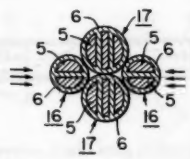
1. A filter assembly comprising a pack of individual filters movable in line across a duct for gas to be filtered, normally closed access means at opposite ends of the line movable to permit entry and removal of the filters, means for introducing purge gas between opposing faces of adjacent filters in the line and to the ends of the line at the access means, the purge gas being at a pressure greater than the pressure in the duct such that the purge gas flows into the duct and opposes entry of the gas being filtered between the opposing faces of adjacent filters in the line and opposes the escape of the gas being filtered at the ends of the line.

4,497,643

OPTICAL FIBER JUNCTION DEVICE AND METHOD OF MAKING THE SAME

Nobuo Kowata, 7-4-15 Sagamihara, and Naoshige Sasano, 379-2 Kamikuzawa, both of Sagamihara, Kanagawa, Japan

Filed Sep. 10, 1982, Ser. No. 416,585
Claims priority, application Japan, Sep. 16, 1981, 56-145776
Int. Cl.³ C03B 23/20
U.S. Cl. 65—4.21 4 Claims



1. A method of making an optical fiber junction device, comprising the steps of:

providing a central inner pipe or rod of glass with an axial-tapered portion having a reduced diameter;

arranging a plurality of optical fibers around said inner pipe or rod, said optical fibers being composed of a plurality of optical fiber junction units each having a plurality of optical fibers;

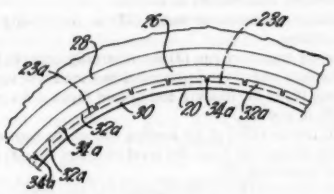
externally heating said optical fibers and said central inner pipe or rod to form a thermally fused assembly having cores of a sectorial cross section.

4,497,644

BLOWER FOR THE ATTENUATION OF FIBERS

Farrokh Kaveh, Dublin, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 12, 1983, Ser. No. 530,918
Int. Cl.³ C03B 37/04
U.S. Cl. 65—14 8 Claims



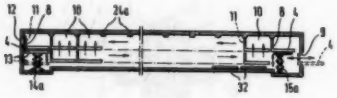
1. Apparatus for producing glass fibers comprising a rotatably mounted spinner having a perhiperal wall with orifices, means for rotating the spinner, means for feeding molten glass to the spinner, such molten glass being emitted from the orifices as fibers during rotation of the spinner, an annular blower for attenuating fibers positioned circumferentially around the spinner comprising an annular manifold and a plurality of slots positioned circumferentially around the blower for the discharge of attenuating gas from said manifold, said slots having an aspect ratio within the range of from about 35 to about 70.

4,497,645

METHOD OF AND FURNACE ASSEMBLY FOR BENDING GLASS SHEETS

Esko J. Peltonen, Suorama, Finland, assignor to O/Y KYRO A/B Tamglass, Tampere, Finland

Filed Apr. 16, 1984, Ser. No. 600,788
Claims priority, application Finland, Jul. 25, 1983, 832684
Int. Cl.³ C03B 23/025
U.S. Cl. 65—107 13 Claims



1. A method of bending glass sheets, wherein glass sheets are placed upon bending moulds (5) supported by transport cars (4), successive cars (4) are displaced periodically from one heating section (10) to another, temperature of glass sheets (6) is elevated by means of heating resistances (23) fitted in each heating section (10), in the final heating section a glass sheet (6) is heated until it bends by the action of heat and gravity to the curvature corresponding to mould (5), whereafter a car (4) in the final heating section is lowered from an upper transport run (2) to a lower run (3) along which cars (4) are displaced periodically in the transport direction opposite to that of the upper run and, at the loading end of a furnace (1), car (4) is steered through a gate (9) in the end wall of said furnace out of the furnace and a bent glass is replaced with a glass to be bent and car (4) is returned into the furnace and lifted onto upper run (2), characterized in that separation of heating sections (10) from each other into sections separate in the longitudinal direction of furnace during each heating cycle is effected only by means of front walls (8) of cars (4) and separation of chilling sections from each other into sections separate in the longitudinal direction of furnace during each chilling cycle is also effected only by means of said front walls (8) of cars, and that the glass sheets on lower run (3) by having them deliver heat through the open-structured or otherwise well heat transferring bottoms (25) of cars (4) to the glass sheets to be heated on upper run (2).

4. A furnace assembly for bending glass sheets comprising:

an elongated furnace (1), having a loading end and a bending end and whose bending end is closed,

an array of cars (4), each having a bending mould (5) for receiving glass sheets (6) and for bending them by means of heat and gravity,

an upper transport run (2) for conveying cars (4) from one heating section (10) to another,

electric resistance elements (23) in the ceiling of heating sections,

a lower transport run (3) for returning cars (4) back to the loading end of the furnace below the cars of upper run (2),

a gate (9) at the loading end of said furnace for passing cars (4) in and out,

a lift device (15*a*) at the loading end of the furnace for picking up cars (4) from the level of lower run (3) to the level of upper run (2),

a lift device (14*a*) at the furnace for lowering cars (4) from the level of upper run (2) to the level of lower run (3), and

displacement means (16, 17; 18, 19) for moving cars (4) on upper run (2) from the furnace loading end to its bending end and on lower run (3) in the opposite direction, characterized in that the side walls and back wall of cars (4) are missing partially or completely and only the front wall (8) (leading wall in the upper run transport direction) is sufficiently high and integral to provide a lock in the longitudinal direction of the furnace between successive sections (10) and that the bottom design (25) of cars (4) is such that heat can readily transfer from the lower run glass sheets to the upper run glass sheets.

4,497,646

CULTIVATION OF RICE WITH SIMULTANEOUS CONTROL OF WEEDS AND FUNGUS DISEASE

Valentin de A. Rubio, Mexicali, Mexico, assignor to Quinica Orgánica de Mëxico, S.A., Mexico

Filed Aug. 23, 1982, Ser. No. 410,386
Int. Cl.³ A01N 37/22, 31/10
U.S. Cl. 71—3 9 Claims

1. A method for simultaneously controlling weed growth and rice blast fungus disease caused by infection of rice plants with *Piricularia oryaze* in cultivated rice fields comprising simultaneously applying to a rice field:

(a) propanil in the form of an aqueous spray in an amount sufficient to inhibit weed growth but insufficient to damage the rice plants; and

(b) pentachloronitrobenzene in the form of an aqueous spray in an amount sufficient to inhibit infection of the rice plants with *Piricularia oryzae.*

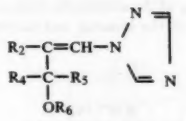
4,497,647

TRIAZOLYLALKENES AS FUNGICIDES AND PLANT GROWTH REGULANTS

Alfred Meyer, Basel; Walter Kunz, Oberwil; Ludwig Maier, Arlesheim, and Hermann Rempfler, Ettingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,825
Claims priority, application Switzerland, Feb. 19, 1982, 1049/82
Int. Cl.³ A01N 43/50, 43/64; C07D 233/60, 249/08
U.S. Cl. 71—76 9 Claims

1. A compound of the formula



wherein

R_2 is C_1–C_9 alkyl;

R_4 and R_5 independently of the other are hydrogen or C_1–C_4 alkyl; and

R_6 is C_1–C_3 alkyl, phenyl or phenyl which is substituted by halogen, CF_3 or C_1–C_3 alkyl.

7. A composition for controlling or preventing attack by fungi and/or for regulating plant growth, which composition contains as active ingredient an effective amount of a compound according to claim 1, together with an inert carrier.

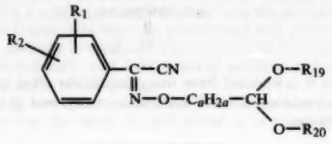
4,497,648

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Henry Szczepanski, Wallbach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 344,708, Feb. 1, 1982, , which is a continuation-in-part of Ser. No. 238,345, Feb. 26, 1981, Pat. No. 4,468,242, which is a division of Ser. No. 69,414, Aug. 24, 1979, Pat. No. 4,269,775. This application Aug. 12, 1982, Ser. No. 407,668
Claims priority, application Switzerland, Sep. 1, 1978, 9252/78
Int. Cl.³ A01N 37/34, 43/28, 43/32
U.S. Cl. 71—88 45 Claims

1. A method for protecting maize from injury caused by application of a haloacetanilide or thiolcarbamate herbicide, said method comprising treating maize seed with an effective amount of a compound of the formula



wherein

R_1 is hydrogen, methyl, methoxy, chlorine, cyano or trifluoromethyl,

R_2 is hydrogen or chlorine, or

R_1 and R_2 taken together is —CH=CH—CH=CH— attached to adjacent carbon atoms in the ring,

a is 1 or 2, and

R_{19} and R_{20} are each methyl or ethyl, or

R_{19} and R_{20} taken together is C_2–C_7 alkylene having 2 or 3 carbon atoms in its principal chain.

4,497,649

5-O-ACYL-5-C-ALKYL-3-O-ARYLMETHYL OR SUBSTITUTED ARYLMETHYL-1,2-O-ALKYLIDENE-αD-GLUCO-PENTOFURANOSE AND β-L-IDO-PENTOFURANOSE HERBICIDES

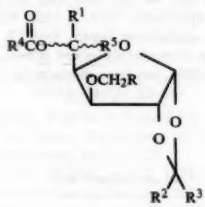
William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 18, 1983, Ser. No. 524,512

Int. Cl.³ A01N *43/08*; C07H *17/04*

U.S. Cl. 71—88 **20 Claims**

1. A compound having the formula:



(I)

wherein

the wavy (~) bond line indicates the D-gluco or L-ido isomers or mixtures thereof,

R is naphthyl, 2-trifluoromethylphenyl, or substituted aryl having 6 through 10 ring carbon atoms and 1 through 3 substituents independently selected from the group of lower alkyl, and halo;

R^1 is alkyl having 1 through 4 carbon atoms;

R^2 and R^3 are independently selected from the group consisting of hydrogen, lower alkyl, lower haloalkyl having 1 through 3 halo substituents and aryl having 6 through 10 carbon atoms or R^2 and R^3 together with the carbon atom to which they are joined form a cycloalkyl group having 5 or 6 carbon atoms;

R^4 is lower alkyl, lower alkoxyalkyl, lower haloalkyl having 1 through 3 halo substituents, aryl having 6 through 10 ring carbon atoms or substituted aryl having 1 through 3 substituents selected from the group of lower alkyl, lower alkoxy, and trifluoromethyl; and

R^5 is hydrogen or methyl.

18. A plant growth regulating composition comprising a compatible carrier and a plant growth regulating effective amount of a compound according to claim **1**.

4,497,650

TETRAHYDROTRIAZINES

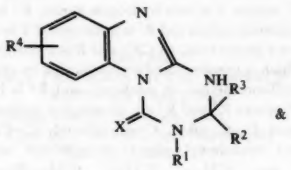
Carl E. Ward, Mountain View, Calif., and Robert V. Berthold, South Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1979, Ser. No. 108,284

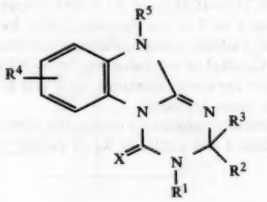
Int. Cl.³ A01N *43/64*; C07D *403/04*

U.S. Cl. 71—93 **51 Claims**

1. Compounds selected from the group consisting of compounds having the general formula:



&



wherein

R^1 is hydrogen, lower alkyl (C_1–C_6), cycloalkyl (C_3–C_7) lower alkenyl (C_2–C_6), lower alkynyl (C_3–C_6), haloalkyl (C_1–C_6) and alkoxyalkyl (C_2–C_6);

R^2 and R^3 individually are hydrogen, ketoalkyl (C_3–C_5), lower alkyl (C_1–C_6), cycloalkyl (C_3–C_6), alkoxyalkyl (C_2–C_4), alkenyl (C_2–C_6), haloalkyl (C_1–C_6), and acyl (C_2–C_4); R^2 and R^3 taken together can also form a spirocyclic ring of C_3–C_5 carbon atoms;

R^4 individually can be H, alkyl (C_1–C_6), a maximum of two halogens selected from the group consisting of Cl, F, and Br, alkoxyl (C_1–C_4), nitro, alkylthio (C_1–C_4) and alkylsulfonyl (C_1–C_4);

R^5 may be hydrogen, carbamoyl, N-alkylcarbamoyl (C_2–C_{14}), N-arylcarbamoyl, N-(substituted aryl)carbamoyl, N-haloalkylcarbamoyl (C_2–C_{12}), N-carboalkoxyalkylcarbamoyl, N-carboxyalkylcarbamoyl (C_3–C_{14}), N-alkoxyalkylcarbamoyl (C_3–C_{14}), N-arylsulfonylcarbamoyl, acyl(C_1–C_{14}), aroyl, substituted aroyl, alkoxycarbonyl (C_2–C_{14}), aryloxycarbonyl, hydroxyacyl (C_2–C_8), alkoxyacyl (C_3–C_9) alkylthioacyl (C_3–C_9), alkylsulfonylacyl (C_3–C_7), N,N-dialkylaminoacyl (C_4–C_{10}), alkylsulfonyl (C_3–C_{14}), haloalkylsulfonyl (C_1–C_{14}), arylsulfonyl, substituted arylsulfonyl, alkyl (C_1–C_{14}), hydroxyalkyl (C_1–C_8), alkoxyalkyl (C_2–C_9), haloalkyl (C_1–C_8), cycloalkyl (C_3–C_7), alkenyl (C_2–C_{14}), cycloalkenyl (C_5–C_7), alkynyl (C_2–C_{14}), aryl and substituted aryl;

X is oxygen or sulfur.

4,497,651

DICHLOROQUINOLINE DERIVATIVES FOR USE AS HERBICIDES

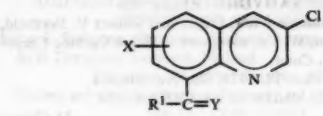
Helmut Hagen, Frankenthal; Juergen Markert, Mutterstadt, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,675

Int. Cl.³ A01N *43/42*; C07D *215/12, 215/14, 215/48*

U.S. Cl. 71—94 **11 Claims**

1. A dichloroquinoline derivative of the formula



I

where X is chlorine in the 5-, 6- or 7 position, Y is oxygen, two hydrogen atoms, two chlorine atoms or =N—A—B, R^1 is hydrogen, OM or —NR^2R^3 where Y is oxygen; R^1 is OM or —NR^2R^3, where Y is two hydrogen atoms; R^1 is hydrogen if Y is two chlorine atoms and R^1 is hydrogen if Y is =N—A—B, where A is a direct bond or CH_2 and B is a phenyl or pyridine radical which is unsubstituted or substituted by chlorine, nitro, methyl, trifluoromethyl or methoxy, and R^1 is hydrogen, or —NR^2R^3, where R^2 and R^3 are identical or different and each is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkenyl, C_1–C_6-hydroxyalkyl, formyl, cyclohexyl, phenyl or pyridinyl, or R^2 and R^3 together are $(CH_2)_4$, $(CH_2)_5$, $(CH_2—O—(CH_2)_2$ or $(CH_2—N(CH_3)—(CH_2)_2$, or R^1 is OM, where M is a metal of main group 1 or 2 of the Periodic Table, hydrogen, C_1–C_8-alkyl, phenyl which is unsubstituted or substituted by halogen, nitro, C_1–C_4-alkyl or trihalomethyl, or $H_2N^{\oplus}R^2R^3$, where R^2 and R^3 have the above meanings, or Y and R^1, together with the carbon atom, are nitrile.

2. A herbicide containing a compound of the formula I as set forth in claim 1 and a solid or liquid carrier.

4,497,652

DIPHENOXYMETHYLPYRIDINE HERBICIDES

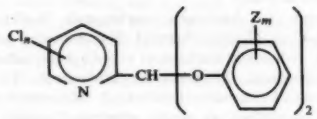
Sudarshan K. Malhotra, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1982, Ser. No. 452,585

Int. Cl.³ A01N *43/40*

U.S. Cl. 71—94 **7 Claims**

1. A method for controlling the growth of undesirable plants which comprises applying to plants, plant parts or their habitat a composition which comprises an inert carrier in admixture with a herbicidally effective amount of a compound corresponding to the formula



wherein n represents an integer of 1 or 2; Z represents chloro, fluoro, or alkoxy of 1 to 4 carbon atoms and m represents an integer of 0, 1 or 2.

4,497,653

AMIDOCARBONYLSULFONIC ACID SALTS: HERBICIDE ANTIDOTES

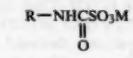
Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 4, 1982, Ser. No. 385,191

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—100 **12 Claims**

1. The method of protecting a corn or soybean crop from injury due to S-ethyl N,N-di-n-propyl thiolcarbamate and/or S-n-propyl N,N-di-n-propyl thiolcarbamate comprising preplant incorporation in the soil in which said crop is to be planted, a non-phytotoxic antidotally effective amount of a compound corresponding to the formula



wherein R is selected from the group lower alkyl having 1 to 4 carbon atoms, inclusive and 2-chloroethyl and M is an alkali metal cation.

4,497,654

FERROMAGNETIC METALLIC POWDERS USEFUL FOR MAGNETIC RECORDING AND PROCESSES FOR PRODUCING SAID METALLIC POWDERS

Katsuhiro Takano; Yoshishige Koma; Masaru Hagiwara, and Shintaro Suzuki, all of Gunma, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,114

Claims priority, application Japan, Nov. 29, 1982, 57-208937

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 AA **22 Claims**

1. A ferromagnetic metallic powder material suitable for use in production of magnetic recording media which comprises iron as a main component and 10–50% by weight of Ni and has a coercive force in the range of 550–900 Oe and a saturation flux density in the range of 90–170 emu/g, wherein said powder comprises particles comprising a core consisting essentially of said iron and a sheath consisting essentially of nickel surrounding said core.

4,497,655

PROCESS FOR PRODUCTION OF HIGH-PURITY METALLIC IRON

Morio Watanabe, Hyogo, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation of Japan, Tokyo, Japan

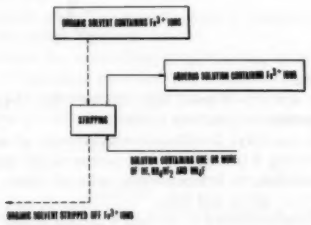
Continuation of Ser. No. 294,538, Aug. 20, 1981, Pat. No. 4,434,002. This application Nov. 2, 1983, Ser. No. 547,870

Claims priority, application Japan, Aug. 29, 1980, 55-119308

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.³ C01G *49/00*

U.S. Cl. 75—34 **1 Claim**



1. A process for the production of metallic iron comprising heating ammonium iron fluoride in a hydrogen stream.

4,497,656

STEEL MAKING METHOD

Edgardo J. Robert, Buenos Aires, Argentina, assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jun. 23, 1982, Ser. No. 391,134

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—60 **2 Claims**

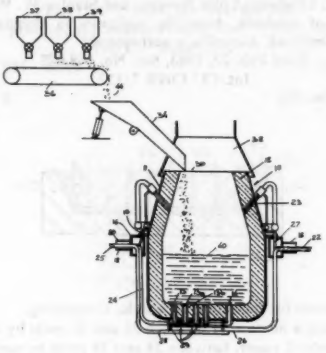
1. A method of producing steel from ferrous hot metal containing carbon, comprising the steps of:

delivering oxygen and a surrounding sheath of hydrocarbon

shielding fluid to said metal and beneath its surface to elevate the temperature thereof to a preselected level,

delivering a solid iron material taken from the group consisting of prereduced iron ore, prereduced iron pellets and at least partially prereduced iron ore to said hot metal at a controlled rate, said iron material tending to lower the temperature of said metal,

entraining carbon in particulate form in an inert gas and delivering the same to said metal at a controlled rate



beneath the surface of said metal and simultaneously with the delivery of said iron material, the feed rate of said carbon being such as to maintain the carbon level in said metal at a substantially constant level as the same is oxidized by said oxygen,

injecting a hydrocarbon shielding fluid in surrounding relation to said carbon, terminating the delivery of said iron material and carbon to said metal while continuing to deliver oxygen and shielding fluid to reduce the level of carbon therein to a preselected level.

4,497,657

METHOD FOR RECOVERING PLATINUM IN A NITRIC ACID PLANT

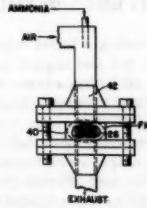
William R. Hatfield, Westfield; Ronald M. Heck, Frenchtown, and Thomas H. Hsiung, Piscataway, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 403,996, Aug. 2, 1982, Pat. No. 4,412,859, and a continuation-in-part of Ser. No. 292,113, Aug. 12, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 489,180

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.³ C22B *11/00*; B22F *3/00*

U.S. Cl. 75—83 **20 Claims**



1. A method for the recovery of platinum and/or rhodium lost from a platinum-containing catalyst during ammonia oxidation processes at temperatures above 850° C.; which comprises bringing said lost platinum and/or rhodium into contact with a foraminate element fabricated from material consisting essentially of palladium and nickel characterized by (a) a novel configuration whereby the initial product of mesh size (N) and wire diameter (d_w) for said element is greater than at least about 0.2 and (b) where, for a given nitrogen throughput, the weight recovery efficiency (η') is a function of the wire diameter (d_w) and mesh size (N) combination, and such that weight recovery efficiency is improved by increasing either the mesh size (N) at a given recovery, wire diameter (d_w) or the wire diameter at a given mesh size.

4,497,658

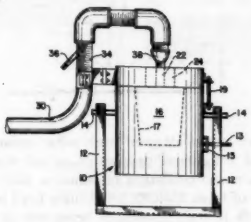
COMPACT PRECIOUS METAL FURNACE AND RECOVERY METHOD

Manfred J. Woog, 1960 B. St., Craig, Colo.

Filed Oct. 11, 1983, Ser. No. 540,441

Int. Cl.³ C22B *11/12*

U.S. Cl. 75—83 **8 Claims**



1. A precious metal recovery furnace comprising:

(a) a support frame;

(b) a furnace body pivotally mounted on said frame to allow tipping thereof, said body having a refractory lined cavity which has a top opening;

(c) a furnace cover substantially rigidly secured to the body providing a cover for the cavity, said cover having a first opening therein sized to receive a gas burner and having a second opening therein spaced from said first opening to provide an escape for exhaust gases and flames and to provide means to input material into said cavity and to provide pouring means for removing molten contents of the cavity by tipping said body;

(d) a gas burner mounted to said cover in a manner so as to provide a downwardly directed oxidizing flame into said cavity; and

(e) means to provide air and gas to said burner.

4,497,659

PRODUCTION OF METALS WITH LOW SELENIUM CONTENTS

Ranko Crnojevich, Gretna; Edward I. Wiewiorowski, New Orleans, and Peter H. Yu, Harvey, all of La., assignors to Amax Inc., Greenwich, Conn.

Filed Aug. 19, 1983, Ser. No. 524,707

Int. Cl.³ C01B *19/02*; C22B *23/04*

U.S. Cl. 75—109 **16 Claims**

1. A process for precipitating selenium from an aqueous solution of at least one metal selected from the group consisting of cobalt, copper, nickel, iron, zinc and cadmium, which comprises adding chromous sulfate to the solution to precipitate selenium therefrom.

4,497,660

CEMENTED CARBIDE

Leif Lindholm, Hägersten, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

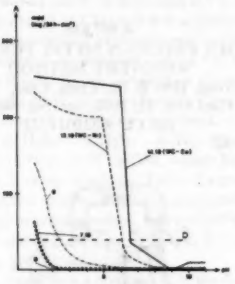
PCT No. PCT/SE80/00141, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 15, 1981, PCT Pub. No. WO80/02569, PCT Pub. Date Nov. 27, 1980

Continuation of Ser. No. 230,943, Jan. 15, 1981, abandoned. This PCT application May 14, 1980, Ser. No. 589,037

Claims priority, application Sweden, May 17, 1979, 7904331

Int. Cl.³ C22C *29/00*

U.S. Cl. 75—240 **5 Claims**



1. Sintered hard metal alloy of high wear resistance combined with good toughness properties, good strength and excellent corrosion and oxidation resistances, said alloy consisting essentially of from 55–95% by volume hard materials of which at least 98% is WC, remainder being one or more carbides of the metals Ti, Zr, Hf, V, Nb and Ta and from 5 to 45% by volume of a single phase binder, said single phase binder consisting essentially of, in % by volume:

Ni: at least 50
Cr: 10–25
Mo: 3–15
Mn: 10 max.
Co: 30 max.
Fe: 20 max.
W: 13 max.

and one or more of:

Al: 0.5–5.0
Si: 0.5–5.0
Cu: 0.5–10

and a total carbon concentration (weight percent, or w/o, C) in the sintered alloy of:

w/o $C=A_i-B_i$ (100 minus w/o hard material)

wherein $A_i=1/100$ (w/o WC in hard material$\times 6.13+$w/o TaC in hard material$\times 6.22+$w/o VC in hard material$\times 19.08$) and

$B_i=0.061\pm 0.008$ for Cr+Mo between 13–15 volume % and

$B_i=0.058\pm 0.007$ for Cr+Mo between 16–35 volume %.

4,497,661

FORMED BRIQUETTES, PROCESS FOR FORMING THE SAME AND PROCESS FOR UTILIZING THE SAME IN THE MANUFACTURE OF METALS

Nicholas Valenti, Mayfield Heights, Ohio, assignor to Ohio & Pennsylvania Fuels Co, Ltd., Mayfield Heights, Ohio

Continuation of Ser. No. 291,151, Aug. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 235,402, Feb. 18, 1981, abandoned, and Ser. No. 129,946, Mar. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 067,847, Aug. 20, 1979, abandoned. This application Dec. 5, 1983, Ser. No. 557,989

Int. Cl.³ C22B *9/10*; C21C *7/02*

U.S. Cl. 75—256 **21 Claims**

1. A compressed briquette formed from a composition comprising a member selected from the group consisting of one or more metal-containing materials, coke, coal and a mixture thereof, magnesia and a cross-linked reaction product of a reactive isocyanate group-containing compound and a reactive hydroxyl group-containing resin, said reaction product being present in an amount effective to bind said briquette together.

4,497,662

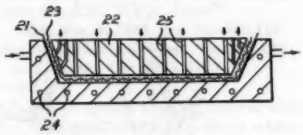
MOULDED PRODUCT

Donald M. Chisholm; Colin Newton, and Stanley W. Winchester, all of Adelaide, Australia, assignors to Douglas Ross Fleet, Birdwood, Australia, a part interest

Filed Feb. 22, 1983, Ser. No. 468,075

Int. Cl.³ C04B *7/352*

U.S. Cl. 106—92 **8 Claims**



1. A process for moulding an article, comprising:

(a) forming a mixture of between 32 and 48 parts by weight of shredded paper, between 24 and 36 parts by weight of plain wheaten flour, between 0.7 and 1.3 parts by weight of caustic soda, between 32 and 48 parts by weight of Portland cement, and a quantity of water equal to between 30% and 70% of the total weight of the other said components,

(b) placing a lining of sheet material into a female mould, and pouring said mixture into said female mould,

(c) placing perforate sheet material over the surface of a vented male mould, and urging the male mould into the female mould and imparting a pressure to said mixture,

(d) heating said female mould to a temperature of between 66° C. and 150° C. until set, and

(e) removing said article from the mould.

4,497,663

METHOD OF ENCAPSULATING A POLLUTING LIQUID

Robert G. Fisher, Beckenham; Ian G. Meldrum, Leatherhead; Alan J. Plomer, London, and Richard A. Robinson, Camberley, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 356,512, Mar. 9, 1982, abandoned, and a continuation of Ser. No. 161,385, Jun. 20, 1980, abandoned. This application May 30, 1984, Ser. No. 615,720

Claims priority, application United Kingdom, Jun. 26, 1979, 7922248

Int. Cl.³ C02F *1/40*; B08B *7/00*; F16L *55/18*

U.S. Cl. 134—4 **30 Claims**

1. A method of encapsulating a liquid organic material to reduce hazard or pollution risk said organic material selected from the group consisting of hydrocarbons, halogenated hydrocarbons, organo phosphates, silicones, esters and ethers said method comprising adding to and mixing with said organic material a liquid polymer miscible with the organic material and containing functional groups, which functional groups are carboxylic acid, anhydride or acid chloride groups and reacting with said liquid polymer in the presence of said organic material a cross-linking agent, also miscible with the organic material and containing complementary functional groups which complementary functional groups are primary or secondary amine groups or alcohol groups, the aforementioned reactants being capable of forming a three dimensional network within an hour at ambient temperatures and allowing a three dimensional polymer network containing encapsulated organic material to form a relatively solid handleable substance

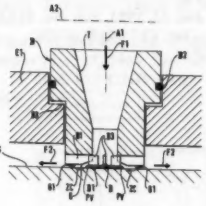
thereby rendering the organic material more tractable or innocuous.

4,497,664

EROSION OF A SOLID SURFACE WITH A CAVITATING LIQUID JET

Philippe Verry, Meylan, France, assignor to Alsthom-Atlantique, Paris, France

Filed Oct. 7, 1983, Ser. No. 539,900
Claims priority, application France, Oct. 7, 1982, 82 16798
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—22.12 **10 Claims**



9. In a process of erosion of a solid surface by a cavitating flow, said process comprising the steps of:

directing a flow of a working liquid under high pressure, said liquid being vaporizable at the ambient temperature at a pressure below the ambient pressure, through a nozzle (B) forming a converging tube (T) in its "longitudinal" direction to form a high speed jet with said liquid, while reducing the pressure of the liquid, and directing said jet toward the surface (S) to be eroded along said longitudinal direction, and

creating cavitation in said liquid jet by lowering the pressure locally to partially vaporize the liquid and create violent displacements of the liquid upon recondensation of the vapor in a condensation zone (ZC) where the pressure is raised and which is in contact with the solid surface to be eroded, the improvement wherein said step of creating cavitation comprises urging said jet against a deflector (D) positioned close to the surface (S) to be eroded, such that the deflector receives the jet on its exit from the nozzle (B) and deflects it in a "lateral" direction parallel to said surface with the edge of said deflector forming an "active" ridge (D2) causing a separation of the flow and the formation of a pocket of vapor (PV) immediately downstream of said ridge between the separated flow and the surface to be eroded.

4,497,665

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Takeshi Fukuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

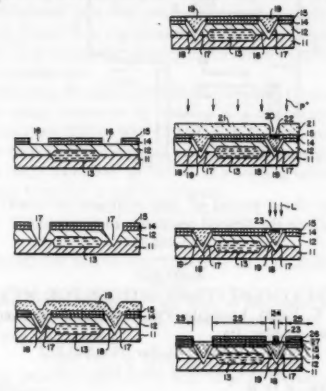
Division of Ser. No. 244,952, Mar. 18, 1981, Pat. No. 4,409,609. This application Jan. 3, 1983, Ser. No. 455,327
Claims priority, application Japan, Mar. 25, 1980, 55-38070
Int. Cl.³ H01L *21/76, 21/308*
U.S. Cl. 148—1.5 **6 Claims**

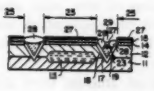
1. A method of manufacturing interconnections for a plurality of semiconductor devices on a substrate, comprising the steps of:

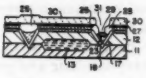
preparing said semiconductor substrate to have a first conductivity type and a semiconductor layer of a second conductivity type opposite to the first conductivity type, the layer being formed on the substrate,

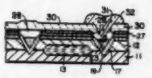
forming V-grooves penetrating through the semiconductor layer and reaching into the substrate for selectively separating said devices,

forming an insulating film on the surface of the V-groove,









forming a polycrystalline semiconductor layer on the insulating film in the V-grooves so as to substantially fill said V-grooves, and

irradiating an energy beam onto selected surface portions of the polycrystalline semiconductor layer along said V-grooves to convert said selected portion to single-crystal semiconductor for forming said interconnections.

4,497,666

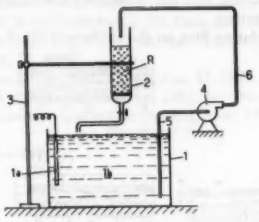
PROCESS FOR THE TREATMENT OF PHOSPHATIZED METAL SURFACES WITH A COMPOSITION COMPRISING TRIVALENT TITANIUM

Joseph Schapira, Paris; Victor Ken, Colombes, and Jean-Loup Dauptain, Aulmoye-Aymeries, all of France, assignors to Compagnie Francaise De Produits Industriels, Gennevilliers, France

Filed Jan. 28, 1983, Ser. No. 462,088
Claims priority, application France, Jan. 29, 1982, 82 01476
Int. Cl.³ C23C *1/10;* **C23F** *7/08*
U.S. Cl. 148—6.15 R **4 Claims**

1. Process for the treatment of phosphatised metallic surfaces, wherein, before the possible application of a paint layer, the phosphatised metal surface is treated by contacting said

surface with a composition comprising an effective amount of a solution of trivalent titanium, said solution having a pH in the



acid range, for a period of time sufficient to confer on the treated surface the desired resistance to corrosion.

4,497,667

PRETREATMENT COMPOSITIONS FOR METALS

Devendra C. Vashi, Lansdale, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jul. 11, 1983, Ser. No. 512,513
Int. Cl.³ C09K *3/00*; C23G *1/20*
U.S. Cl. 148—6.15 R **32 Claims**

1. A solid composition for use in aqueous solution in the cleaning and conditioning of the surface of a metal selected from the group consisting of iron, zinc, aluminum, and alloys of said metals, prior to the application on said surface of a conversion coating, which solid composition contains in percent by weight:

(i) a titanium salt in an amount from about 0.01 to about 0.18%, calculated as titanium ion,

(ii) an alkali metal phosphate selected from the group consisting of mono-, di- and tri-alkali metal orthophosphates and mixtures thereof, in an amount from about 0.6 to about 16%, calculated as PO_4,

(iii) an alkali metal polyphosphate or pyrophosphate or mixtures of said polyphosphate and pyrophosphate, in an amount from about 3 to about 14.5%, calculated as P_2O_5,

(iv) an alkali metal carbonate selected from the group consisting of alkali metal carbonates, bicarbonates, and sesquicarbonates and mixtures thereof, in an amount from about 1.6 to about 37%, calculated as CO_3,

(v) an alkali metal hydroxide in an amount from about 1.5 to about 11%, calculated as hydroxyl,

(vi) an alkali metal salt of EDTA in an amount from about 0.3 to about 9.3%, calculated as EDTA.

(vii) an alkali metal silicate selected from the group consisting of alkali metal metasilicates, alkali metal orthosilicates, and mixtures thereof, in an amount from about 3.5 to about 41%,

(viii) the anionic surfactant sodium butoxy-ethoxyacetate in an amount from about 1 to about 15%, and

(ix) a non-ionic surfactant in an amount from about 0.1 to about 7.5%.

4,497,668

PHOSPHATING PROCESS FOR ZINC-PLATED METALS

Raschad Mady, Pulheim; Winand Hanelt, Düren; Roland Morlock, Bergheim; Dieter Geruhn, Werl; Lutz Leyhe, Witten-Heven; Jobst H. Meyer zu Bexten, Soest-Ostönnen, and Franz Ricke, Schwelm, all of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 554,879
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245411
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 Z **20 Claims**

1. A process for phosphating a zinc-plated metal article comprising contacting said zinc-plated metal article with a phosphating solution consisting essentially of zinc ions and phosphate ions wherein

(a) from about 1 to about 2.5 g/l of zinc ions are present,

(b) the free acid content thereof is in the range of from about 0.8 to about 3 points,

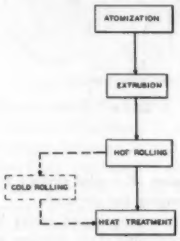
(c) the ratio of total acid to free acid is in the range of from about 5 to about 10, and wherein the contact time is not longer than about 5 seconds.

4,497,669

PROCESS FOR MAKING ALLOYS HAVING COARSE, ELONGATED GRAIN STRUCTURE

Kathy K. Wang, Suffern, and Mark L. Robinson, Warwick, both of N.Y., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Jul. 22, 1983, Ser. No. 516,109
Int. Cl.³ C21D *00/00*
U.S. Cl. 148—11.5P **28 Claims**



1. A method of making alloys characterized by a coarse, elongated grain structure, the method comprising:

(a) water atomizing a charge of components comprising the alloy to form powder,

(b) extruding the powder to a predetermined product configuration,

(c) hot rolling the product in a direction substantially parallel to the extrusion direction and,

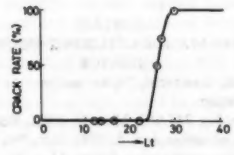
(d) annealing the product to permit recrystallization therein.

4,497,670

ROTOR SHAFT AND MANUFACTURING METHOD THEREOF

Masao Siga; Seishin Kirihara; Takatoshi Yoshioka; Katsukuni Hisano; Toshimi Tan; Yoji Akutsu, all of Hitachi, and Kei Kobayashi, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,854
Claims priority, application Japan, Feb. 8, 1982, 57-19508
Int. Cl.³ C21D *9/28*
U.S. Cl. 148—12 R **14 Claims**



1. A rotor shaft having at least one journal portion adapted to be supported by a bearing means, comprising a plurality of segments joined to each other by welding to form a cylindrical sleeve, said sleeve being mounted on said journal portion by a shrink-fit, each of said segments being made of an alloy steel of bainite structure comprising, by weight, 0.04 to 0.35% C, 0.2 to

2% Mn, 0.1 to 0.6% Si, 0.5 to less than 5% Ni, 0.5 to 3% Cr, 0.2 to 2%Mo, and the balance Fe, and having at least 50 kg/mm^2 yield strength at room temperature and a hot crack susceptibility (Lt) of less than 24, which is expressed by the following equation:

$$Lt=70(C-Si/12-Mn/9+3P+4S+Ni/23+Cr/35-+Mo/70),$$

wherein each element symbol in the equation represents the content of the element in weight percent.

4,497,671

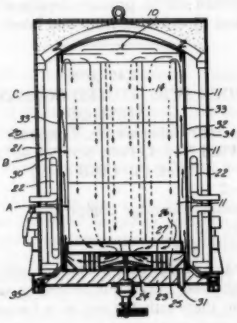
PROCESSED FERROUS METAL AND PROCESS OF PRODUCTION

Gary L. Wasserman, 4635 Private Lk. Dr., Birmingham, Mich. 48010 and David J. Carter, 22620 E. River, Grosse Isle, Mich. 48138

Continuation of Ser. No. 344,469, Feb. 1, 1982, abandoned. This application Nov. 25, 1983, Ser. No. 555,431

Int. Cl.^{3} C21D *1/48*

U.S. Cl. 148—16 **7 Claims**



1. In the production of ferrous metal from carbon-containing non-particulate scrap steel segments, the steps comprising:

establishing in the chamber or retort of an axial flow decarburizing atmosphere furnace a random loaded gas-permeable array of non-particulate scrap steel segments each having a maximum dimension of about eight inches and thus loaded being spatially distributed to accommodate uniform axial gas flow among the segments so as to avoid mobilizing or mixing of the loaded segments during decarburizing;

subjecting the thus loaded segments to a decarburizing anneal cycle in a circulating high water-vapor decarburizing atmosphere at elevated temperatures peaking in the range from about 1300° to about 1650° F. such that on completion of the anneal cycle the segments are decarburized to the core of the segments and the average carbon content of the segments is reduced to less than about 0.04%;

and cooling the decarburized segments.

4,497,672

METHOD FOR THE PREPARATION OF A RARE EARTH-COBALT BASED PERMANENT MAGNET

Yoshio Tawara, and Ken Ohashi, both of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,822

Claims priority, application Japan, Apr. 6, 1982, 57-57027

Int. Cl.^{3} H01F *1/02*

U.S. Cl. 148—102 **5 Claims**

1. A method for the preparation of a rare earth-cobalt based permanent magnet which comprises the steps of:

(a) sintering a shaped body of an alloy powder composed of from 22 to 28% by weight of at least one rare earth element, from 10 to 30% by weight of iron, form 2 to 10% by weight of copper and from 0.1 to 5% by weight of at least one additive element selected from the group consisting of zirconium, titanium, manganese, tantalum, hafnium, chromium, silicon, tungsten and vanadium, the balance being cobalt, into a sintered body;

(b) subjecting the sintered body to a primary aging treatment by heating at a temperature in the range from 600° to 850° C. followed by a first continuous cooling of the sintered body down to a temperature in the range from 300° to 400° C. at a cooling velocity in the range from 0.5° to 3.0° C./minute; and

(c) subjecting the sintered body after the step (b) to a secondary aging treatment by heating at a temperature in the range from 700° to 900° C. followed by a second continuous cooling of the sintered body down to a temperature in the range from 300° to 500° C. at a cooling velocity in the range from 0.1 to 5.0° C./minute.

4,497,673

METHOD OF MANUFACTURING DOUBLE-WALLED TUBE

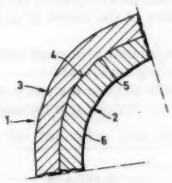
Alexander Esser, Warstein, Fed. Rep. of Germany, assignor to Esser-Werke GmbH Vorm. Westmontan-Werke, Warstein, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,626

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148498

Int. Cl.^{3} C21D *1/00*

U.S. Cl. 148—127 **5 Claims**



1. A method of manufacturing a double-walled tube for transporting solid materials comprising the steps of, comprising the steps of providing a flame-hardened circumferentially uninterrupted core tube member of a hardenable carbon steel and a casing tube member of a tough steel material with an inner diameter of the casing tube member and the outer diameter of the core tube member selected such that a sufficient amount of play remains therebetween; inserting the core tube member into the casing tube member easily because of the sufficient amount of play; and subjecting the core tube member to repeatedly successive heat hardening steps for successive radial expansion of the core tube member during successive heat hardening steps and for firm adhering surface abutment of an outer surface of the core tube member against an inner surface of the casing tube and fixation of the core tube member in the casing tube member even with great deviations in the inner and outer diameters and/or noncircularity of the tube members.

4,497,674

METHOD AND APPARATUS FOR CONTINUOUSLY ANNEALING STEEL SHEET

Hiroshi Ikegami; Kozaburo Ichida, and Katsuyoshi Kobayashi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,528

Claims priority, application Japan, May 31, 1983, 58-95017; Jan. 5, 1984, 59-80

Int. Cl.^{3} C21D *9/56*

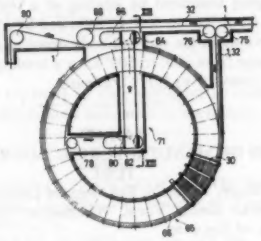
U.S. Cl. 148—156 **15 Claims**

1. In a method of continuously annealing steel strip succes-

sively passed through a heating zone, soaking zone, primary cooling zone, overaging zone and secondary cooling zone in an annealing furnace, the overaging treatment comprises the steps of:

allowing an endless guide strip to run at the same speed as a strip being processed delivered from the primary cooling zone along a passageway spirally extending in the overaging zone and at a given distance in the direction of radius;

laying the strip being processed over the guide strip on the entry side of the overaging zone to allow the two strips to travel together spirally through the overaging zone;



guiding the processed and guide strips together out of the spiral passageway by changing the direction of the travel thereof at a point where the overaging treatment is completed;

separating the processed strip from the guide strip by changing the direction of the travel of at least one of the two strips;

delivering the separated processed strip to the subsequent secondary cooling zone; and

returning the guide strip to the entry end of the overaging zone for the next circular trip through the spiral passageway.

4,497,675

PROCESS FOR THE MANUFACTURE OF SUBSTRATES FROM CARBON-COATED SILICON DIOXIDE FABRIC THAT CAN BE USED FOR LARGE-SURFACE SILICON BODIES

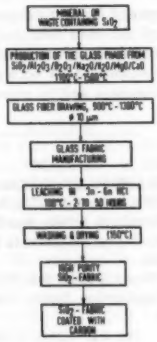
Hubert Aulich, Munich; Karl-Heinz Eisenrith, Schliersee, and Hans-Peter Urbach, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,099

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247532

Int. Cl.³ H01L *21/225;* C03C *25/02, 25/06*

U.S. Cl. 148—191 **20 Claims**


MINERAL OR WASTE CONTAINING SiO_2
GLASS FIBER DRAWING, 500°C - 1300°C
GLASS FABRIC MANUFACTURING
WASHING & DRYING (150°C)
HIGH PURITY SiO_2 - FABRIC
SiO_2 - FABRIC COATED WITH CARBON

1. A process for the manufacture of substrates from carbon-coated silicon dioxide fabric that can be used for large-surface silicon bodies, for the manufacture of solar cells according to a strip-coating process, the improvement comprising the steps of:

(a) using mineral or waste materials containg SiO_2 as starting materials;

(b) transforming said starting materials into a glass phase with a mixture of materials selected from the group consisting of aluminum oxide (Al_2O_3), carbonates, and oxides of the elements in the alkaline and alkaline earth metal groups;

(c) producing a homogenous glass melt at 1100° to 1500° C.;

(d) transforming said glass melt into a glass fiber stage;

(e) processing said glass fiber into a glass fabric;

(f) subjecting said glass fabric to a leaching process in hot mineral acid; and

(g) coating said glass fabric with carbon.

17. The process according to claim 1, wherein a composition of the glass is used so that following subjecting said glass fabric to a leaching process, a sufficient amount of boron remains in said silicon dioxide whereby, when subsequently coating said fabric with molten silicon, primary doping of said silicon body is accomplished by diffusion from said fabric.

4,497,676

GUNPOWDER SUBSTITUTED COMPOSITION AND METHOD

Earl F. Kurtz, 3607 Columbia Dr., Longmont, Colo. 80501

Filed Nov. 1, 1982, Ser. No. 437,965

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **20 Claims**

1. A consumable cartridge comprising:

(a) a primer; and

(b) a projectile; and

(c) a molded cartridge case containing means for receiving said primer and means for receiving said projectile in association therewith for use in a firearm, said molded cartridge case comprising a composition made from an inorganic nitrate oxidizer and an organic acid selected from the group consisting of erythorbic acid, ascorbic acid, and mixtures thereof.

4,497,677

METHOD FOR MANUFACTURING CERAMIC SUBSTRATE

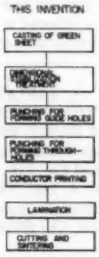
Sakae Sanada, Hadano, and Yoshiyuki Ohzawa, Hiratsuka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,855

Claims priority, application Japan, Mar. 10, 1982, 57-37367

Int. Cl.³ B32B *31/14;* C04B *39/12*

U.S. Cl. 156—89 **10 Claims**



1. A method for manufacturing a ceramic substrate comprising the steps of:

making a green sheet;

pressing and heating said green sheet to a temperature of 20°

to 250° C., the pressure applied during the pressing being within the range of 1 to 100 kg/cm^2 to effect dimensional stabilization of said green sheet;

forming a conductor on the surface of said green sheet; and

sintering the conductor-formed green sheet.

4,497,678

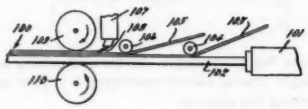
METHOD OF MAKING A LAMINATE CONSTRUCTION

Joel H. Nussbaum, Farmington Hills, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 432,077, Sep. 30, 1982, abandoned, which is a division of Ser. No. 250,879, Apr. 3, 1981, Pat. No. 4,368,225. This application Nov. 28, 1983, Ser. No. 555,411

Int. Cl.^{3} B29D *3/00*

U.S. Cl. 156—244.11 **7 Claims**



1. The method of making a laminate construction, said method comprising the steps of:

laminating a first sheet of a first material to a second sheet of a second material using sheet lamination techniques, said sheet lamination techniques including pressing said first and second sheets together with adhesive means therebetween;

extrusion laminating with heat a first body comprising a first thermoplastic onto said first sheet, said first thermoplastic being compatible for lamination with said first material of said first sheet without the use of adhesives;

extrusion laminating with heat a second body comprising a second thermoplastic onto said second sheet, said second thermoplastic body compatible for lamination with said second material without the use of adhesives and being incompatible for lamination with said first thermoplastic by said extrusion lamination with heat, said at least one of first and second bodies being substantially thicker than either of said first or second sheets.

4,497,679

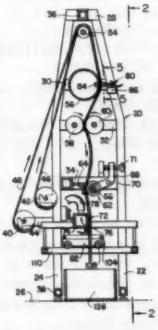
METHOD OF FORMING PLASTIC ENVELOPES

Charles T. Hathaway, 518 S. Rancho Lindo, Covina, Calif. 91724

Filed Oct. 13, 1981, Ser. No. 311,038

Int. Cl.^{3} B32B *31/18*

U.S. Cl. 156—251 **4 Claims**



1. The process of forming plastic protective envelopes from sheet polyester which is untreated with material to aid in marginal bead sealing including:

superimposing at least one sheet of relatively thin untreated polyester upon another sheet of relatively thin untreated polyester;

drawing said superimposed sheets over a mandrel;

interposing a plurality of fixed first cutting and sealing means independent of said mandrel in the path of said sheets capable of simultaneously cutting said sheets into endless strips and bead sealing endless marginal edges of said strips;

feeding said sealed strips through stop clamp means to regulate the speed and metering of said strips;

positioning a vacuum means in the path of said metered strips adapted to releasable retain said strips in a fixed position; and

activating a second cutting sealing means adjacent said vacuum means in the path of said vacuum retained strips capable of simultaneously cutting said metered strips and bead sealing marginal edges normal to said endless marginal edges to form said individual untreated polyester envelopes.

4,497,680

Patent Not Issued For This Number

4,497,681

APPARATUS AND METHOD FOR APPLYING HEAT SHRINKABLE CONICAL PLASTIC LABELS ON CONTAINERS

Robert F. Kontz, Toledo, and Gary L. Moore, Swanton, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

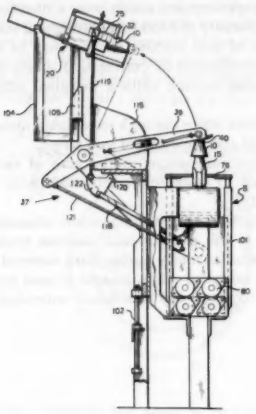
Filed Nov. 10, 1983, Ser. No. 550,412

Int. Cl.^{3} B29C *7/30*

U.S. Cl. 156—363 **14 Claims**

1. An apparatus for applying preformed conical plastic labels to a container, the apparatus comprising: means for holding a stacked column of preformed conical labels, the labels being of a generally cylindrical cross section and having no top or bottom, the labels being of a frusto-conical outline, transferring means for picking a label from the supply stack and applying it to a container in a woodpecker-like action, the label being turned about 180° from its position at the bottom of the stacked column, there being a transfer head on the transfer arm to pick a label from the bottom of the column, means for retracting the end portion of the head so the head will not take a label from the column, means to move the end of the head outwardly

therefrom to seat within the bottom opening of the label and grasp the label, and means for separating the grasped label



from the column including air blowing between the column and the inside of the grasped label.

4,497,682

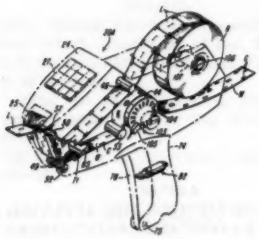
HAND-HELD ELECTRICALLY SELECTABLE LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 268,320, May 29, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,820

Int. Cl.[3] **B41J** *3/00;* **B41F** *1/08*

U.S. Cl. 156—384 **33 Claims**



1. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising: a housing having a handle, the housing having a front portion, a rear portion, and a top portion, the handle depending in a downward direction, a label applicator mounted on the front portion, label roll mounting means disposed at the rear portion, electrically selectable printing elements disposed in the housing, means for advancing the carrier web, a keyboard disposed at the top portion of the labeler, a visual display disposed adjacent the keyboard for displaying data entered into the keyboard, a control circuit for the print head and the display, means including a circuit board for the control circuit disposed adjacent and in underlying relationship to the keyboard, and means electrically connecting the control circuit with the keyboard, the printing elements and the display.

4,497,683

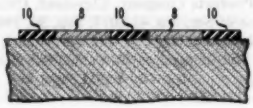
PROCESS FOR PRODUCING DIELECTRICALLY ISOLATED SILICON DEVICES

George K. Celler, New Providence, and McDonald Robinson, Chester, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 3, 1982, Ser. No. 374,308

Int. Cl.[3] **C30B** *25/10;* **B05D** *5/12*

U.S. Cl. 156—603 **6 Claims**



1. A process for producing a device comprising an active region of single crystal silicon overlying a region of silicon oxide comprising the steps of

(1) forming a precursor structure that includes a region of non-single crystal silicon material which both overlies said region of silicon oxide and contacts a nucleative region of single crystal silicon wherein said precursor structure is formed from a body having an exposed surface of a region of single crystal silicon below an exposed surface of said region of silicon oxide by

(a) selectively epitaxially depositing silicon on said region of single crystal silicon to produce said nucleating region of single crystal silicon while substantially avoiding the deposition of silicon on said region of silicon oxide until the surface of said epitaxially deposited silicon is substantially coplanar with said surface of said region of silicon oxide and

(b) depositing silicon both on said region of silicon oxide and on said nucleating region of single crystal silicon and

(2) converting said non-single crystal silicon region into said active region of single crystal silicon by employing said nucleating region of single crystal silicon as a nucleating site.

4,497,684

LIFT-OFF PROCESS FOR DEPOSITING METAL ON A SUBSTRATE

Edward H. Sebesta, San Francisco, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Feb. 22, 1983, Ser. No. 468,130

Int. Cl.[3] **C23F** *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **17 Claims**

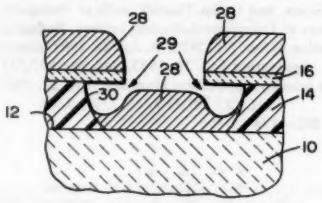
1. A method of depositing a metal on a substrate to form a metal pattern, comprising:

(a) providing a substrate having a surface covered with a first sacrificial layer of a greater thickness than said metal pattern, which first sacrificial layer is covered by a second rigid sacrificial layer, which is covered by a photoresist layer, which has one or more trenches exposing a pattern on the second sacrificial layer;

(b) extending substantially the pattern through the second sacrificial layer to expose substantially the pattern on the

first sacrificial layer without significantly affecting the photoresist layer or the first sacrificial layer;

(c) selectively removing sufficient of the first sacrificial layer to partially undercut the second sacrificial layer to provide an overhanging lip portion and to expose an enlarged similar pattern on the substrate without significantly affecting the second sacrificial layer or the substrate, said lip portion overhanging said enlarged pattern by at least about 1000 Å;



(d) stripping the photoresist layer from the second sacrificial layer without significiantly affecting the second sacrificial layer or the first sacrificial layer;

(e) depositing the metal on the enlarged pattern on the substrate; and

(f) eliminating the first sacrificial layer while leaving the metal pattern on the substrate.

4,497,685

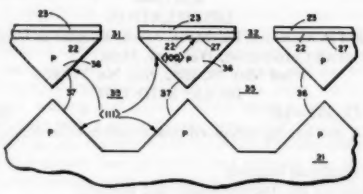
SMALL AREA HIGH VALUE RESISTOR WITH GREATLY REDUCED PARASITIC CAPACITANCE

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 261,435, May 8, 1981,. This application Oct. 24, 1983, Ser. No. 544,914

Int. Cl.[3] **H01L** *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—647 **8 Claims**



1. A method for forming an array of sub-micron dimensioned resistors on a doped substrate, wherein each resistor is formed comprising the following steps:

masking the substrate to outline a pair of boundary regions for each semi-array of active regions to become resistors;

slotting the substrate in said boundary regions to a given depth;

etching away the substrate via said slots sufficiently to separate the semi-arrays of active regions from the substrate except at spaced apart supporting locations therealong;

oxidizing the substrate and semi-arrays to at lease substantially completely oxidize the peripheries of the semi-arrays;

slotting the substrate orthogonally to the first mentioned slots to provide second slots with orthogonal pairs of slots defining individual transistor active regions for the respective transistors;

optionally doping the regions defined by orthogonal pairs of slots via corresponding edges of the second slots and driving in the doping; and,

establishing electrical connections to the regions.

4,497,686

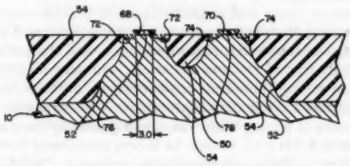
FINE-LINE DIE AND METHOD OF MAKING SAME

Walter Weglin, Bellevue, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 369,906, Apr. 19, 1982, Pat. No. 4,437,924, and a continuation-in-part of Ser. No. 365,368, Apr. 5, 1982, Pat. No. 4,447,286. This application Mar. 16, 1984, Ser. No. 590,722

Int. Cl.[3] **C23F** *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—651 **13 Claims**



10. A method for fabricating a precision die by chemical milling the working face of an etchable workpiece to form a plurality of raised die elements separated and bounded by a plurality of cavities in a line-and-space array, said method comprising the steps of:

a. forming an etchant-resistant surface pattern of pockets penetrating slightly into the working face of an etchable workpiece, masking the regions corresponding to the

desired location for raised die elements in the finished die configuration and having a surface width dimension greater than the desired finished line width;

b. selectively etching said workpiece in etchant-active regions intermediate and outwardly bounded by said pockets to undercut the same and form die cavity precursors within said working face having a width approximately equal to the desired space width in the finished die configuration;

c. forming an etchant-resistant surface pattern of boundary grooves along the marginal edges of said raised die element precursors; and,

d. selectively etching etchant-active regions intermediate said boundary grooves to undercut the same and form die element cavity precursors having a width approaching substantially the desired line width.

4,497,687

AQUEOUS PROCESS FOR ETCHING COOPER AND OTHER METALS

Norvell J. Nelson, Palo Alto, Calif., assignor to Psi Star, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 517,943, Jul. 28, 1983, which is a continuation-in-part of Ser. No. 501,159, Jun. 6, 1983.
This application Dec. 20, 1983, Ser. No. 563,683
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—659.1 **36 Claims**

1. In a process for etching copper, the steps of: forming a film of water on the surface of the copper, and exposing the water-covered copper to gaseous NO_2 for a time sufficient to dissolve the copper.

4,497,688

OIL SCAVENGING MATERIAL

Ernest R. Schaefer, 40 Country Corners Rd., Wayland, Mass. 01778

Continuation of Ser. No. 265,385, May 20, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,155
Int. Cl.³ D21H *3/66*
U.S. Cl. 162—181.1 **3 Claims**

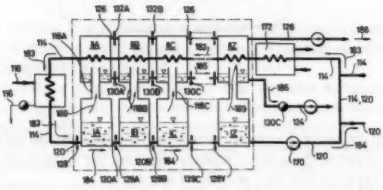
1. Method of scavenging an oil slick which comprises contacting that oil slick with a quantity of particles derived from a friable material formed from paper machine sludge combined in the presence of water with a very high early strength, fast-setting portland cement and dried in the absence of substantial pressure at a moderate temperature, said sludge comprising the sludge formed from the paper-making machine fluid discharge in the daily manufacture of high quality bond and artistic paper and having a consistency similar to papier mache with a ratio of water to solids in said sludge such that about one pound total sludge contains about three ounces of paper machine sludge solids, said sludge solids containing approximately 80 percent substantially pure cellulose fibers derived from wood and cotton fibers and approximately 20 percent other solids comprising titanium pigment, silica pigment and paper-maker's clay in substantial equal quantities, said sludge being substantially free of resinous materials, said very high early strength, fast-setting portland cement being a fast-setting hydraulic cement having very high compressive strengths within a few hours of mixing with water, and generally from about 2,900 to over 5,000 p.s.i. within 24 hours, containing beta $2CaO.SiO_2$, $3CaO.CaSO_4$ and chemically unbound $CaSO_4$ obtained by firing at a temperature between about 1,200° and 1,600° C. for about 1 to 5 hours a mixture of a source respectively of CaO, SiO_2, Al_2O_3 and SO_3 in proportions of about 1 to 3 moles of $CaSO_4$ to about (0.5 to 2)+2n moles of $CaCO_3$ per mole of $Al_2O_3.nSiO_2$ and grinding the resultant clinker where n is about 1.5 to about 2.5, wherein the ratio of paper machine sludge solids to portland cement solids is about three parts by weight of sludge solids to between about one-half part and about three parts by weight of cement solids, said friable material characterized in that when placed on an oil slick it will sorb up to five times its weight of oil substantially to the exclusion of any water that may be present in the vicinity of the oil and will continue to float on such water even when saturated with oil, and removing the oil-containing particles together with the oil contained therewith from the area of the oil slick.

4,497,689

HEAT ENGINEERING APPARATUS FOR CARRYING OUT THERMODYNAMICAL PROCESSES COMPRISING A PAIR OF MUTUALLY OPPOSITE PHASE TRANSITIONS OF A WORK MEDIUM

László Szücs, and Csaba Tasnádi, both of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Continuation of Ser. No. 287,579, Jul. 28, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,324
Claims priority, application Hungary, Aug. 22, 1980, EE-2555
Int. Cl.³ B01D *1/26, 3/02, 3/06*
U.S. Cl. 202—174 **35 Claims**



1. In a heat-engineering apparatus comprising elements designed, sized and arranged for carrying out thermodynamic processes in which a work medium undergoes mutually opposite phase transitions comprising evaporation and condensation without the need to provide an enclosing vessel for the apparatus, the apparatus comprising casings consisting of confining plates and spacers therebetween, phase transition compartments in said casings, passages connecting pairs of said phase transition compartments with one another so as to form a number of work chambers, passages connecting said work chambers in series to as to form stages of mutually opposite phase transitions, and passages for introducing and withdrawing said work medium into and from said phase transition compartments; the improvement comprising means for precluding the need for transition third compartments, said means being characterized in that at least two adjacent casings enclose an even number of and not less than four phase transition compartments in superimposed relationship, said work medium introducing passages being delimited from the interior of said casings by said confining plates and said spacers, and said passages connecting the members of the pairs of phase transition compartments being orifices free from pipe structure in partitions separating the former from one another within said casings.

4,497,690

DISTILLATION

Richard R. Manzone, Fairhaven, Mass., assignor to Hoyt Manufacturing Corporation, Westport, Mass.

Filed May 19, 1982, Ser. No. 379,664
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—181 **15 Claims**

1. A still having enhanced condensation efficiency comprising:

a cylindrical housing,

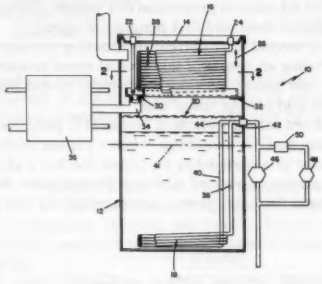
a heating coil located inside said housing,

means for maximizing condensation efficiency, including

a condensing coil, mounted above said heating coil in said housing,

said condensing coil having a diameter smaller than said cylindrical housing to define a vapor flow space between said cylindrical housing and said condensing coil,

said condensing coil having further vapor flow space inside its turns, said turns being designed, dimensioned and arranged such that a segment of the inside thereof



and a segment of the outside thereof are available for vapor condensation, and

means for removing condensate from said housing to said exterior of said housing.

4,497,691

STACK COOLER FOR DRY QUENCHING OF COKE

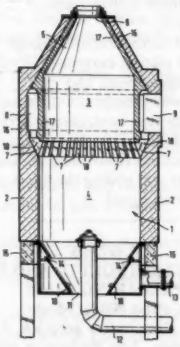
Heinz Thubeauville, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,904

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208415

Int. Cl.³ C10B *39/02, 45/00*

U.S. Cl. 202—228 **18 Claims**



1. A stack cooler for dry quenching of coke and other lumpy fuel materials comprising:

a vertical circular chamber formed from refractory materials and including a substantially circular prechamber having a charging opening in the top of an upper tapered section which narrows in an upward direction and has an inner refractory materials walling and an outer walling, the inner walling and outer walling being independent and separate with a space therebetween such that the weight loads are not transferred to the other, a substantially cylindrical section located below and adjacent the upper tapered section, said cylindrical section including means forming spaced-apart gas exhaust discharge openings along the circumference and at the bottom of the prechamber, said inner and outer wallings defining an annular gas-collection channel behind the refractory materials of the inner walling above said gas exhaust openings where the inner walling of the gas-collection channel continues to the inner refractory walling of the upper tapered section and where the outer walling of the gas-collection channel continues to the outer walling of the upper tapered section, and

a substantially cylindrical quenching chamber disposed below and adjacent the bottom of said circular prechamber, said quenching chamber having a discharge opening disposed at and adjoining the bottom thereof.

4,497,692

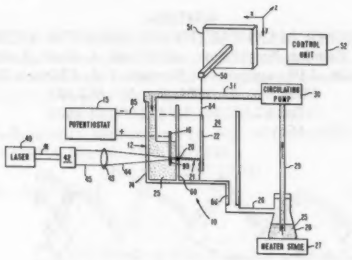
LASER-ENHANCED JET-PLATING AND JET-ETCHING: HIGH-SPEED MASKLESS PATTERNING METHOD

Mordechai H. Gelchinski, Bedford Hills; Lubomyr T. Romankiw, Briarcliff Manor; Donald R. Vigliotti, Yorktown Heights, and Robert J. Von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1983, Ser. No. 504,016

Int. Cl.³ C25D *5/02, 5/08, 21/10;* **C25F** *3/02*

U.S. Cl. 204—15 **54 Claims**



1. In a process of chemically-enhanced additive or subtractive processing of a substrate in a chemically-active electrolyte fluid,

the improvement comprising directing a high intensity energy beam to heat said substrate at the site to be treated concomitantly with simultaneously directing a jet of said fluid at the locus of desired enhanced-chemical action on said substrate,

said energy beam being collinear with said jet,

said site and said locus coinciding at the same spot, and

said beam having a diameter comparable to or less than the diameter of said jet at said locus.

4,497,693

METHOD FOR PLATING AN ARTICLE AND THE APPARATUS THEREFOR

Ken Ogura, Okazaki; Nobuhiko Yamada, Hekinan, and Hiroshi Ohmi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 22, 1984, Ser. No. 592,087

Claims priority, application Japan, Apr. 11, 1983, 58-62318

Int. Cl.³ C25D *5/02, 17/06*

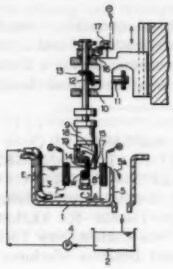
U.S. Cl. 204—15 **5 Claims**

1. A method for plating an article comprising the steps of preparing a station holding an amount of an electrolyte of a certain fixed level with an anode soaked in said electrolyte,

grasping said article by a chuck at a portion of said article where no plating is needed within a shield cover, maintaining an airtight space between said chuck and said shield cover, and leaving a gap between an end of said chuck and an end of said shield cover, said article being cathode, and

dipping said article together with said shield cover to such an extent that an end portion of said shield cover is dipped

into said electrolyte, said end of said chuck being apart from a surface of said electrolyte,



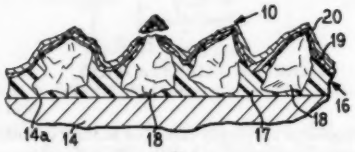
wherein said portion of said article is not plated, whereas all the remaining portion of said article is plated.

4,497,694

METHOD OF MANUFACTURING ABRASIVE ARTICLES

Jack D. Bankier, Northbrook, and Dennis A. Gross, Lake Forest, both of Ill., assignors to Barristo, Ltd., Chicago, Ill.

Filed Apr. 17, 1984, Ser. No. 602,403
Int. Cl.³ C25D *5/34, 5/48, 15/00*
U.S. Cl. 204—16 **8 Claims**



1. The method of making files which comprises stamping sheet metal into a plurality of fingers depending from a header strip, covering the fingers with a slurry of epoxide resin and abrasive grits, heat curing the epoxide resin to form a sheath around each finger with the abrasive grits firmly anchored therein, suspending a plurality of the sheath covered fingers from their header strips in a vacuum chamber, evacuating the chamber to degasify the sheaths on the fingers, melting a strike metal in the chamber, increasing the vacuum in the chamber below the vapor pressure of the molten strike metal, depositing a thin layer of the strike metal around each plastic sheath, acid etching the deposited strike metal layer on each finger, electroplating a hard metal layer around each etched strike metal layer, separating the fingers from the header strips, and applying a plastic handle over the separated ends of the fingers.

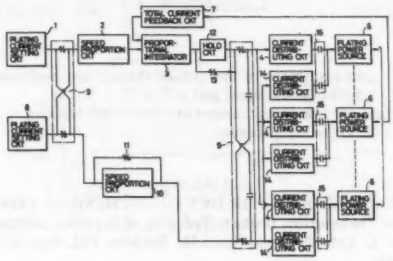
4,497,695

PLATING CURRENT AUTOMATIC SWITCHING METHOD AND APPARATUS

Daisuke Shinkai; Haruo Komoto, and Shigeharu Hamada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 467,046
Claims priority, application Japan, Feb. 16, 1982, 57-23360
Int. Cl.³ C25D *5/10, 7/06*
U.S. Cl. 204—28 **11 Claims**

1. A plating current automatic switching device comprising:
- a first speed proportion circuit (2) for providing a first current set value in proportion to a first plating line speed;
- a plurality of plating power sources (6) for supplying plating current to a plating tank (17) associated with each said source;
- a plurality of first tank current distributing circuits (4) for distributing an output of said first speed proportion circuit to said plurality of plating power sources for setting magnitude of said plating currents in said plating tanks;
- a second speed proportion circuit (10) for providing a second current set value in proportion to a second plating line speed different from said first plating line speed;
- a plurality of second tank current distributing circuits (14) for distributing an output of said second speed proportion circuit to said tanks for setting magnitudes of said plating currents in said plating tanks; and
- a plating current setting switching circuit (15) provided for each plating tank for switching, when a plating thickness change point of a material to be plated reaches a plating tank, the plating current of said tank from a value determined by said first current set value provided by said first



tank current distributing circuit to a value determined by said second current set value provided by said second tank current distributing circuit.

7. A method for controlling plating currents in a multi-tank plating line along which a strip member to be plated passes, comprising the steps of:
- providing first and second control signals corresponding to first and second plating currents and respective first and second plating thicknesses; and
- as a plating thickness change point on said member passes along said plating line, controlling currents in one of said tanks before said plating thickness change point with said first control signal and controlling plating currents in ones of said tanks after said plating thickness change point with said second control signal.

4,497,696

GOLD-PLATING ELECTROLYTE AND PROCESS FOR PREPARING SAME

Elena V. Shemyakina, ulitsa 800 let Moskvy, 3, korpus 2, kv. 8; Nina M. Dyatlova, Samotechny pereulok, 4, korpus 1, kv. 4; Alexandr I. Formenov, 7-ya Parkovaya ulitsa, 30, kv. 164; Alexandr V. Belikin, ulitsa Vilisa Latsisa, 4, kv. 208; Alexandr Y. Fridman, ulitsa 800 let Moskvy, 3, korpus 2, kv. 8; Nina I. Sinko, Zhigulevskaya ulitsa, 32, kv. 47; Iosif G. Erusalimchik, Sirenevy bulvar, 19, kv. 21, all of Moscow; Galina I. Efimova, ulitsa Gagarina 4, kv. 67, and Julian P. Zavalsky, ulitsa Pionerskaya, 12, kv. 9, both of poselok Tomilino, Moskovskaya oblast, all, U.S.S.R.

Filed Jan. 18, 1982, Ser. No. 340,351
Int. Cl.³ C01G *7/00;* **C25D** *3/48*
U.S. Cl. 204—46 G **8 Claims**

4. A process for producing a gold-plating electrolyte comprising reacting of the reagents chloroauric acid, an alkali metal salt of ethylenediaminetetracetic acid, an alkali metal sulphite, caustic potash and ammonium chloride in a single stage in distilled water at a temperature of from 80° to 90° C. with the following proportions of the reagents, g/l;

chloroauric acid	12.6-250

-continued

alkali metal salt of ethylenediamine-tetraacetic acid	39–1,000
alkali metal sulphite	6–190
caustic potash	32–800
ammonium chloride	6.6–132;

whereby a gold-plating electrolyte is obtained along with a precipitate of chlorides and sulphates of alkali metals; and separating precipitate from the electrolyte by filtration.

4,497,697

ELECTROLYTIC PREPARATION OF 3,6-DICHLOROPICOLINIC ACID

Cary S. Marshall, Danville, and Scott D. Troyer, Pittsburg, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1984, Ser. No. 585,662
Int. Cl.³ C25B *3/00*
U.S. Cl. 204—73 R **10 Claims**

1. An improvement in the process of preparing 3,6-dichloropicolinic acid wherein tetrachloropicolinic acid in basic aqueous solution is electrolytically reduced to 3,5,6- and/or 3,4,6-trichloropicolinate anions under conditions such that said trichloro species are further reduced to 3,6-dichloropicolinate anions,

said improvement comprising providing as said solution one which, in addition to the anions of said tetrachloroacid, contains said trichloro anions in a concentration greater than could have been achieved by reduction in-situ, under said conditions, of more of said tetrachloro anions.

4,497,698

LANTHANUM NICKELATE PEROVSKITE-TYPE OXIDE FOR THE ANODIC OXYGEN EVOLUTION CATALYST

John O'M. Bockris, College Station, Tex., and Takaaki Ottagawa, Westmont, Ill., assignors to Texas A&M University, College Station, Tex.

Filed Aug. 11, 1983, Ser. No. 521,973
Int. Cl.³ C05B *1/02*
U.S. Cl. 204—129 **4 Claims**

1. An electrochemical cell for producing oxygen and hydrogen by the electrolysis of water, said cell comprising:

a container;

an aqueous electrolyte in said container;

a cathode mounted in said container in contact with said electrolyte;

a lanthanum nickelate anode mounted in said container in contact with said electrolyte; and

means for electrically interconnecting said cathode and said anode,

whereby when an electrical potential is exerted between said cathode and said anode, gaseous hydrogen will be evolved at said cathode and gaseous oxygen will be evolved at said anode.

4,497,699

METHOD OF TREATING FOIL FOR ELECTROLYTIC CAPACITORS

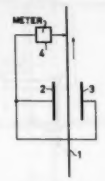
Hendrik J. de Wit; Albertus W. M. Van Berlo, and Cornelis Crevecoeur, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,595
Claims priority, application Netherlands, Apr. 14, 1982, 8201558
Int. Cl.³ C25F *3/02*; H01L *21/306*; B44C *1/22*
U.S. Cl. 204—129.2 **2 Claims**

1. A method for treating foil for use in electrolytic capacitors in which said foil moving in one direction is passed through a treatment liquid and in the liquid the capacitance of the foil is measured continuously, including the steps of:

passing an alternating current from at least one current-carrying electrode immersed in the treatment liquid in the proximity of the foil in the treatment liquid; and

having present at least one voltage electrode at a small distance from the foil between the current-carrying electrode(s) and the foil at which voltage electrode the voltage is measured as a measure of the required foil capacitance by means of a phase-sensitive voltmeter; and



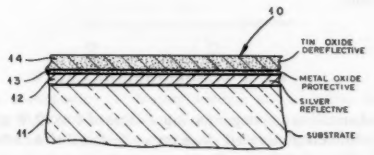
using the measured capacitance to control the treatment process.

4,497,700

METHOD OF COATING A TRANSPARENT SUBSTRATE

Rolf Groth, Bochum, and Dieter Müller, Siegen, both of Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Fürth, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,239
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310916; May 6, 1983, 3316548
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 P **10 Claims**



1. A method of coating a transparent substrate with a multilayer optical filter which comprises the steps of:

(a). applying a reflective silver coating to said substrate;

(b). thereafter applying a protective coating to said silver coating of a metal oxide by magnetron cathode sputtering at an S protective coating rate and in an S protective coating partial pressure;

(c). thereafter applying by magnetron cathode sputtering a dereflective metal oxide coating at an E dereflective coating-oxygen partial pressure and at an E dereflective coating rate; and

(d). controlling the coating rates during the application of said protective and dereflective coating so that the S partial pressure is less than the E partial pressure and the S coating rate is less than the E coating rate.

4,497,701

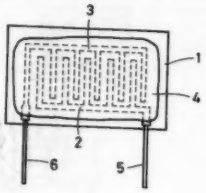
HUMIDITY SENSITIVE DEVICE

Michihiro Murata, Kyoto, and Akira Kumada, Ootsu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 22, 1983, Ser. No. 468,479
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—430 **12 Claims**

1. A humidity sensitive device comprising an insulating substrate, first and second electrodes formed on the surface of said insulating substrate and spaced from each other, and a humidity sensitive film formed on the surface of said insulating

substrate and covering at least the position of said surface located between said electrodes, characterized in that said humidity sensitive film comprises: (a) at least one of a conductive powder and a semiconductive powder; (b) a solid electrolyte powder; and (c) an organic polymer at least a part of which is cross-linked by a zirconium compound.



4,497,702

CORROSION INHIBITION

Richard F. Miller, Humble; Tony S. Go, Houston, and George R. Wilson, III, Houston, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 9, 1982, Ser. No. 406,605
Int. Cl.³ C23F *11/08*
U.S. Cl. 208—47 **6 Claims**

1. In a method of inhibiting metal corrosion in process equipment by the introduction of amide-based corrosion inhibiting compositions into the equipment, the improvement comprising using a corrosion inhibiting composition containing as the principal component a compound having the structural formula:

$$R'R''R'''CCNHR(NHR)_xNHCCR'R''R'''$$

wherein x is an integer having a value of 0 to 12, R is a straight or branched chain alkylene group having 2 to 6 carbon atoms, R′ R″ and R‴ are alkyl groups and the average sum of the carbon atoms contained in R′ R″ and R‴ varies from 3 to 20.

4,497,703

HYDROTREATMENT FOR PETROLEUM CUTS WITH OFFRETITE

Jacques Bousquet, Irigny, and Claude Guguen, Septeme Pont L'Eveque, both of France, assignors to Elf France, Paris, France

Filed Mar. 28, 1983, Ser. No. 479,212
Claims priority, application France, Apr. 5, 1982, 82 05876
Int. Cl.³ C10G *45/12, 47/20*
U.S. Cl. 208—111 **10 Claims**

1. A hydrotreatment process for petroleum cuts containing sulfur for simultaneous desulfurization and improvement of flow properties by conversion of n-paraffins, comprising contacting the sulfur containing cuts at a temperature of 200° to 500° C., a pressure of 1 to 80 bars, a liquid spatial velocity of the load (LSV) of 0.3 to 6 $m^3/m^3/h$, with hydrogen at a hydrogen/hydrocarbon molar ratio between 2 and 10, in the presence of a catalytic system based on a synthetic zeolitic crystalline silico aluminate of the offretite structure having the chemical formula $(M_1,M_2 \ldots)_2 (Al_2O_3)(Sio_2)_y$ wherein y is between 10 and 50, M_1 and M_2 are selected from cations of the groups I and II of the Periodic Table of Elements, the offretite is impregnated with a mixture of oxides or sulfides of at least one metal selected from the group consisting of chromium, molybdenum and tungsten with an oxide or a sulfide of at least one metal selected from the group consisting of iron, cobalt and nickel.

4,497,704

HYDROCARBON CONVERSION PROCESS

Mark J. O'Hara, Mt. Prospect, and Russell W. Johnson, Villa Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 481,969, Apr. 4, 1983, Pat. No. 4,447,556.
This application Jan. 26, 1984, Ser. No. 574,231
Int. Cl.³ C10G *47/12*
U.S. Cl. 208—112 **2 Claims**

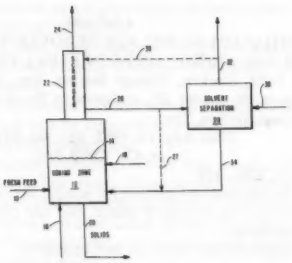
1. A process for the hydrocracking of a hydrocarbon charge stock which comprises contacting said charge stock at hydrocracking conditions with a catalytic composite comprising a combination of a carrier material, a Group VIB metal component and Group VIII metal component wherein said Group VIB metal component and said Group VIII metal component are incorporated in said catalytic composite by means of a non-aqueous organic solution of a Group VIB metal compound and a Group VIII metal compound, wherein said non-aqueous organic solution comprises dimethylformamide, formamide, diethylformamide, ethylformamide, methylformamide, pyridine, aniline or toluene and wherein said catalytic composite is calcined in a non-oxidizing atmosphere.

4,497,705

FLUID COKING WITH SOLVENT SEPARATION OF RECYCLE OIL

Harold N. Weinberg, Livingston; Charles Rebick, Annandale, and Kenneth O. McElrath, Iselin, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 17, 1983, Ser. No. 523,960
Int. Cl.³ C10G *9/32*
U.S. Cl. 208—127 **8 Claims**

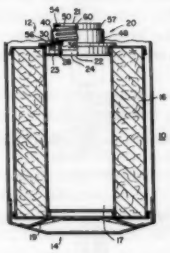


1. In a fluid coking process comprising the steps of:
(a) contacting a carbonaceous chargestock with hot fluidized solids in a fluidized bed contained in a coking zone at coking conditions to produce coke which deposits on said fluidized solids and a vapor phase product, including heavy and light normally liquid hydrocarbons, and
(b) passing said vapor phase product of step (a) to a scrubbing zone and separating at least a portion of said heavy hydrocarbons from said vapor phase product in said scrubbing zone, said separated hydrocarbons having a Conradson carbon content ranging from about 5 to about 50 weight percent, the improvement which comprises:
(c) subsequently contacting at least a portion of said separated hydrocarbons, said portion of separated hydrocarbons having a Conradson carbon content ranging from about 5 to about 50 weight percent, with a solvent in a solvent separation zone at separation conditions to separate said heavy hydrocarbons into a high Conradson carbon hydrocarbonaceous product and a low Conradson carbon hydrocarbonaceous product;
(d) recycling at least a portion of said high Conradson carbon product to said coking zone, and
(e) recovering said low Conradson carbon hydrocarbonaceous product of step (c).

4,497,706
OIL FILTER RELIEF VALVE

Charles G. Pickett, North Plainfield; John G. Charney, Colonia, and Marra Khasin, Rahway, all of N.J., assignors to Purolator Inc., New Brunswick, N.J.

Filed Nov. 2, 1983, Ser. No. 547,960
Int. Cl.³ B01D 27/10
U.S. Cl. 210—130 16 Claims



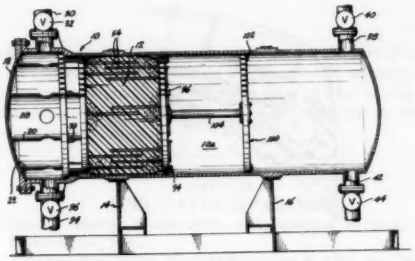
1. A fluid filter assembly comprising:
(a) a filter housing having an open end and a closed end;
(b) a filter element positioned in the filter housing and extending between the closed end of the filter housing and the open end of the filter housing; and
(c) a relief valve in the fluid filter, the relief valve including
(i) a housing having a first end a second end, the first end located adjacent the open end of the filter, and the second end having fluid inlet ports therein and extending toward the closed end of the filter;
(ii) a base fixedly connected to the second end of the housing and extending into the area defined by the filter element;
(iii) a piston positioned inside of the housing;
(iv) an annular valve seat located in the base for normally receiving the piston in sealing relation, the valve seat having a continuous channel therein with one end being capable of fluid communication with the fluid inlet ports of the housing and the other end of the continuous channel opening from a surface of the valve seat toward the piston; and
(v) a spring positioned in the housing between the first end of the housing and the piston for urging the piston toward the base and against the valve seat.

4,497,707
REGENERABLE FLOW-THROUGH OIL/WATER SEPARATION APPARATUS

Joseph W. Anderson, Bellevue, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Mar. 21, 1983, Ser. No. 477,640
Int. Cl.³ B01D 29/38
U.S. Cl. 210—136 11 Claims

1. Regenerable filtration apparatus for separating dispersed immiscible liquids and/or solids from a continuous phase carrier liquid such as water, comprising a containment vessel having interior spaces interconnected by an elongated filter chamber having a substantially cylindrical interior wall, and a substantially cylindrical filter coaxially received in said filter chamber, the filter comprising a compressible and reexpandable filter body comprising strands of open-pore foam material, and a substantially flow-impervious, close-fitting flexible tubular skin bonded to the peripherally exterior strands of said filter body substantially throughout the length of the filter body, the skin at one end of said filter body being peripherally fixed and sealed in relation to and around the interior wall of said chamber while the remaining length of said skin is free to slide along said interior wall as the skin-covered filter body is compressed and reexpanded, the relative dimensions of the skin and filter

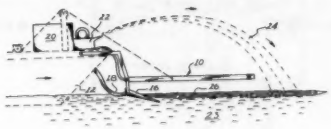


body being selected such that the skin does not compress the filter body.

4,497,708
DEVICE FOR MAGNETICALLY RECLAIMING OIL FROM WATER

James M. Young, 3417 Voorde Dr., South Bend, Ind. 46628

Continuation of Ser. No. 295,855, Aug. 24, 1981, abandoned.
This application Feb. 22, 1983, Ser. No. 468,854
Int. Cl.³ B01B 35/06
U.S. Cl. 210—222 7 Claims



1. In a combination, a floating vehicle and a device for reclaiming oil from a body of water comprising impeller means mounted on said vehicle for distributing ferromagnetic particles in said oil, said vehicle carrying means for drawing said oil and particles from said water after the oil is saturated with the particles, said drawing means in communication with a storage facility in said vehicle, a magnetic grid means cantilevered from said vehicle and spaced above said oil and water adjacent said drawing means for concentrating the particle impregnated oil under the grid means and adjacent the drawing means, said grid including means for providing a magnetic field in a pulsating manner to allow said drawing means to create a flow of said oil particles to said storage facility and pumping means for causing said concentrated oil and particles to enter said storage facility from said drawing means.

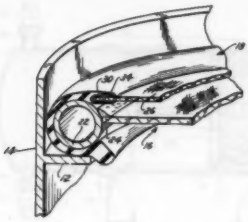
4,497,709
TWO PIECE SCREEN FILTER

Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,807
Int. Cl.³ B01D 25/08, 25/04
U.S. Cl. 210—489 16 Claims

1. A filter unit for filtering a substance by having the substance pass through successive filter media positioned in a layered like fashion, said unit comprising:
a first filter including first filter media supported by a substantially rigid member about said filter's perimeter;
a second filter including second filter media and sleeve means detachably coupled to said rigid member;
said sleeve means being of a resilient material; and
wherein said sleeve means is capable of being stretched into

a bearing coupling about a portion of said rigid member so as to detachably maintain said second filter adjacent said



first filter in a layered relationship so as to allow successive filtering by the first and second filter media.

4,497,710

SUBSTRATE FOR LIQUID CHROMATOGRAPHY AND PROCESS FOR ISOLATING AND PURIFYING FAT-SOLUBLE SUBSTANCE BY THE LIQUID CHROMATOGRAPHY ON THE SUBSTRATE

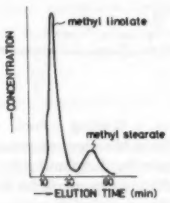
Masakatsu Wagu; Shoichiro Hayashi; Naohiro Murayama, and Teruo Sakagami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,655

Claims priority, application Japan, Oct. 7, 1981, 56-159713

Int. Cl.³ B01A *15/08*

U.S. Cl. 210—635 **6 Claims**



1. A process for isolating and purifying a fat-soluble substance comprising subjecting the fat-soluble substance to liquid chromatography by using as a substrate spherical particles of a highly cross-linked polymer which comprises:

(a) 100 parts by weight of at least one monomer unit selected from the group consisting of vinyl octanoate, vinyl laurate, vinyl stearate, 2-ethylhexyl acrylate, 2-ethylhexyl methacrylate, dodecyl acrylate, dodecyl methacrylate, stearyl acrylate and stearyl methacrylate, and

(b) 10 to 100 parts by weight of a cross-linking agent unit which is copolymerizable with any of said monomer and has at least two functional groups.

4,497,711

CHROMATOGRAPHY COLUMNS

David Shepherd, Cheshire, England, assignor to Imperial Chemical Industries, PLC, Great Britain

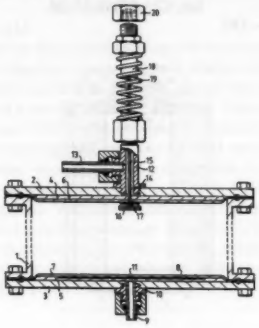
Filed Aug. 17, 1983, Ser. No. 524,073

Claims priority, application United Kingdom, Sep. 6, 1982, 8225308

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **17 Claims**

7. A chromatography column for packing with particulate bed-material, said column comprising a tubular container having a first end portion defining an inlet port at one end and a second end portion defining an outlet port at the other end, both said inlet and outlet ports being protected by porous bed-retaining means positioned with a space for the bed between them, and filler tube means which communicates directly with the space for the bed for feeding at least a final portion of a slurry or smoke of particulate material from a



pressurized source thereof until said space is full of particulate material and said particulate material extends at least partially into said filler tube means to maintain said bed at a predetermined pressure when said filler tube means is disconnected from the pressurized source to thereby prevent pressure relaxation of said bed.

4,497,712

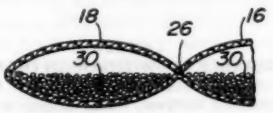
ABSORBENT PILLOW

Albert R. Cowling, Rosemont, Pa., assignor to Geotech Development Corporation, King of Prussia, Pa.

Filed Oct. 14, 1983, Ser. No. 541,924

Int. Cl.³ E02B *15/04*

U.S. Cl. 210—691 **16 Claims**



1. Apparatus for absorbing liquids from a surface which constitute an environmental problem comprising an expendable pillow, said pillow being the form of a container having at least three discrete pockets side by side, each pocket being only partially filled with an organic granular absorbent material occupying not more than about 50% of the volume of each pocket, said container being made from a non-woven synthetic fiber, said container having high permeability and being coated with a surfactant, said granular material having an absorption capacity in excess of 300% so that it may expand on contact with liquids and fill the pockets, the weight of the pillow before use being less than four pounds, said pockets being delineated by means joining opposite faces of said container, said means including a pair of spaced joints between said opposite faces of said container so that said container can be separated by cutting the container between said joints.

4,497,713
METHOD OF INHIBITING CORROSION AND DEPOSITION IN AQUEOUS SYSTEMS

Gary E. Geiger, 4156 Whiting Rd., Philadelphia, Pa. 19154

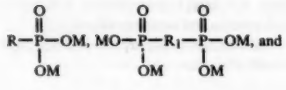
Filed Apr. 1, 1982, Ser. No. 364,562
Int. Cl.[3] C02F 5/14
U.S. Cl. 210—699 11 Claims

1. Method of treating cooling water systems having a pH of about 8 or greater so as to inhibit scale formation on, and corrosion of, metallic parts in contact with said water system, said method comprising the steps of adding to said cooling water system, based on one million parts of said cooling water system,

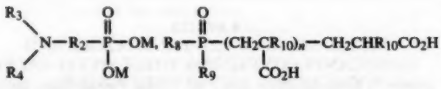
(1) a water soluble zinc compound adapted to liberate from about 0.1 parts per million to about 15 parts per million of Zn^{+2} ions in solution;

(2) from about 0.5 to about 50 parts per million of a water soluble sodium carboxymethylcellulose having a viscosity of less than about 200 centipoise (2% gum solution concentration, measured at 25° C.); and

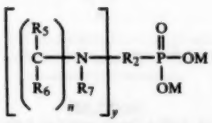
(3) from about 0.2 to about 50 parts per million of an organophosphorus acid compound or water soluble salt thereof; said organo-phosphorus acid compound comprising a member or water soluble salt of such member selected from the group of compounds represented by the formulas



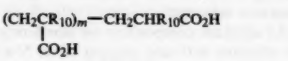
and



wherein R is lower alkyl having from about one to six carbon atoms, substituted lower alkyl of 1–6 carbon atoms, a mononuclear aryl radical, or substituted mononuclear aromatic; M is a water soluble cation; R_1 is alkylene having from 1 to about 12 carbon atoms or a substituted alkylene having from about 1 to about 12 carbon atoms; R_2 is a lower alkylene having from about one to four carbon atoms, or an amine or hydroxy substituted lower alkylene; R_3 is H, OH, NH_2, substituted amino, an alkyl having from one to six carbon atoms, a substituted alkyl of from one to six carbon atoms (e.g., OH, NH_2 substituted), a mononuclear aromatic radical and a substituted mononuclear aromatic radical (e.g., OH, NH_2 substituted); R_4 is R_3 or the group represented by the formula



where R_5 and R_6 are each hydrogen, lower alkyl of from about one to six carbon atoms, a substituted lower alkyl (e.g., OH, NH_2 substituted), hydrogen, hydroxyl, amino group, substituted amino group, a mononuclear aromatic radical, and a substituted mononuclear aromatic radical (e.g., OH and amine substituted); R_7 is R_5, R_6, or the group R_3—PO_3M_2 (R_2 is as defined above); n is a number of from 1 through about 15; y is a number of from about 1 through about 14; R_{10} is H, CH_3, or C_2H_5; R_8 is H, a straight or branched alkyl residue having from 1–18 carbon atoms, a cycloalkyl residue having from 5–12 carbon atoms, an aryl residue, an alkylaryl residue, or a residue of the formula:

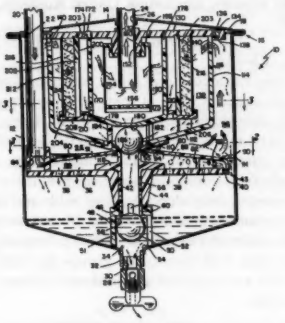


wherein R_{10} has its previous significance and the sum of n+m is an integer of at most 100, or a residue —OX wherein X is hydrogen or a straight or branched alkyl residue having 1–4 carbon atoms and; R_9 is a residue —OX, wherein X has its previous significance.

4,497,714
FUEL-WATER SEPARATOR

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation of Ser. No. 241,076, Mar. 6, 1981, Pat. No. 4,384,962. This application Sep. 27, 1982, Ser. No. 424,346
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.[3] B01D 21/26
U.S. Cl. 210—788 5 Claims



1. A fuel-water separator, comprising a container having fuel entry port means, fuel exit port means, a lower portion having a drain opening, means for separating water from the fuel inside said container and causing the water to move downwardly while the low density fuel moves upwardly, a first valve means inside said container for preventing the separated water from remixing with the fuel, said first valve means including an opening through which separated water drains downwardly and float means for closing said opening when the water collected raises to said opening, and second valve means for closing said drain opening, said second valve means including a safety valve ball for stopping fuel flow through the drain opening, said safety valve ball having a density less than water and greater than the fuel to move downwardly to close said drain opening when the separated water has been drained.

4,497,715
N-ALKYLISOSTEARAMIDES AS ANTISTATIC AGENTS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 3, 1982, Ser. No. 404,794
Int. Cl.[3] C11D 3/32; D06M 13/40
U.S. Cl. 252—8.8 20 Claims

1. An antistatic composition for use in the wash cycle of fabric laundering comprising an effective antistatic amount of N-alkylisostearamide antistatic agent having the formula:

RCONHR'

wherein RCO is derived from isostearic acid, and R' is a primary saturated or unsaturated aliphatic hydrocarbon chain

containing 1–18 carbons, dispersed into and/or absorbed onto an absorbent substrate.

11. An antistatic composition for laundering fabrics comprising an effective antistatic amount of an N-alkylisostearamide antistatic agent having the formula:

RCONHR'

wherein RCO is derived from isostearic acid, and R' is a primary saturated or unsaturated aliphatic hydrocarbon chain containing 1–18 carbons, and a detergent selected from the group consisting of anionic, nonionic, amphoteric detergent materials, and mixtures thereof.

18. A method of protecting fabrics against acquiring static electricity during the laundering process comprising contacting fabrics with the composition of claim **11**.

4,497,716

FABRIC SOFTENING COMPOSITION

Ho T. Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,850

Claims priority, application United Kingdom, Dec. 23, 1982, 8236650

Int. Cl.[3] **D06M** *13/16, 13/18, 13/20*

U.S. Cl. 252—8.8 **6 Claims**

1. A concentrated liquid fabric softening composition comprising an aqueous base, at least 10% by weight of a water-insoluble cationic fabric softening agent, from 0.02% to 0.5% by weight of an electrolyte and from 0.2% to 4% of a nonionic viscosity control agent which comprises an alkylene oxide adduct of a fatty compound selected from the group consisting of fatty amides, fatty alcohols, fatty acids and fatty esters, said fatty compound containing at least 10 carbon atoms and each molecule of the alkylene oxide adduct containing an average of not more than 7 alkylene oxide groups per molecule and from 0% to 2.5% by weight of a monohydric alkanol having 1 to 4 carbon atoms.

4,497,717

COMPOSITIONS FOR USE IN OIL RECOVERY AND METHOD OF USE

Leslie Bretherick, Ascot, and Philip K. G. Hodgson, Reading, both of England, assignors to The British Petroleum Company p.l.c., London, England

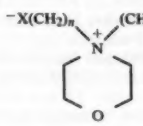
Filed Mar. 31, 1982, Ser. No. 363,865

Claims priority, application United Kingdom, Apr. 1, 1981, 8110210

Int. Cl.[3] **E21B** *43/22*

U.S. Cl. 252—8.55 D **3 Claims**

1. A method of recovering crude oil from a formation which method comprises displacing the crude oil from the formation employing an aqueous surfactant composition wherein the surfactant composition comprises an aqueous medium having dispersed therein a surfactant wherein the surfactant is a betaine of formula:



(I)

where

R is a C_8 to C_{24} alkyl or C_8 to C_{24} alkylphenyl which may optionally be substituted by inert substituents

m is an integer from 1 to 10

n is an integer from 1 to 5

and X is CO_2^-, SO_3^- or $PO_3^=$.

4,497,718

HOMOGENEOUS AQUEOUS FABRIC SOFTENING COMPOSITION WITH STILBENE SULFONIC ACID FLUORESCENT WHITENER

Oscar W. Neiditch, Fair Lawn; Edmund S. Hurdle, North Bergen, and Daniel J. Fox, Hawthorne, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,624

Int. Cl.[3] **D06L** *3/12;* **D06M** *13/38, 13/46*

U.S. Cl. 252—8.75 **13 Claims**

1. A method for forming a fabric softening system containing fluorescent whitening agents comprising:

(a) preparing an organic premix of:

(i) from about 0.5% to about 10% fabric softening cationic surfactant;

(ii) from about 0.001% to about 0.3% stilbene sulfonic acid fluorescent whitening agent added in acid form;

(iii) from about 0.001% to about 0.5% of a nonionizable base, the ratio of base to fluorescent whitening agent on an equivalent weight basis being about 1:1 to about 6:1;

(b) adding said premix to deionized water containing water-soluble adjunct fabric softening components including from 0.01% to 0.3% of an acidic pH adjusting agent to obtain a pH of 3.0 to 6.0; and

(c) mixing the combined blends with sufficient stirring to uniformly disperse all components.

7. A method according to claim **1** wherein the fluorescent whitening agent is either 4,4'-bis[(4-phenylamino-6-N-bis(2-hydroxyethyl)amino-1,3,5-triazin-2-yl)amino]stilbene-2,2'-disulfonic acids or 5-(2H-naphtho[1,2d]triazol-2-yl]-2-(2-phenylethenyl)-benzene-sulfonic acid.

4,497,719

METAL SALTS OF 1,2,4-THIADIAZOLE AND LUBRICANTS CONTAINING THESE METAL SALTS

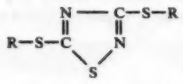
James P. King, Lansdale, and Paul Tubbs, Philadelphia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 29, 1982, Ser. No. 426,526

Int. Cl.[3] **C10M** *1/54*

U.S. Cl. 252—42.7 **4 Claims**

1. A lubricating composition comprising from about 80 to about 99.9 parts of a lubricant selected from the group consisting of a lithium grease, a clay grease, a silicone grease, an aluminum complex grease, a mineral oil of lubricating viscosity, and a synthetic fluid of lubricating viscosity and from about 0.1 to about 20 parts of a composition having the formula



wherein R is a metallic ion.

4,497,720

METHOD FOR TREATING METALLIC OR CERAMIC SURFACES AT HIGH TEMPERATURES

Hiroyuki Moriga, Takatsuki; Masao Uchida, Ibaraki; Koichi Iwashita, and Shuji Tanaka, both of Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 26, 1983, Ser. No. 526,586

Claims priority, application Japan, Apr. 10, 1982, 57-173263; May 10, 1982, 57-173986; Jun. 10, 1982, 57-174444; Aug. 27, 1982, 57-147793; May 31, 1983, 58-94971

Int. Cl.[3] **C10M** *1/30*

U.S. Cl. 252—52 A **13 Claims**

1. A method for treating metallic or ceramic surfaces, which comprises applying a lubricating composition comprising

50% by weight or more of a polyalkylene glycol or deriva-

tive thereof thermally decomposable at 150° C. or above in air and

50% by weight or less of at least one fluorine containing compound selected from the group consisting of

(b-1) nonionic fluorine-containing compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a polyoxyalkylene chain,

(b-2) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a residue of a carboxylic acid or a salt thereof with a metallic atom, ammonia or a nitrogen-containing amino compound capable of forming the salt with the carboxylic acid group in the molecule,

(b-3) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a residue of phosphoric acid or a salt thereof with a metallic atom, ammonia or a nitrogen-containing amino compound capable of forming the salt with the phosphoric acid group in the molecule,

(b-4) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a residue of sulfonic acid or a salt thereof with a metallic atom, ammonia or a nitrogen-containing amino compound capable of forming the salt with the sulfonic acid group in the molecule,

(b-5) compounds having a fluoroalkyl groups of 3 to 20 carbon atoms and a cationic group containing a quaternary nitrogen atom in the molecule, and

(b-6) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and an amphoteric group in the molecule

to the metallic or ceramic surfaces kept at 200° C. or above, and treating the metallic or ceramic surfaces while thermally decomposing the component positively on the metallic or ceramic surfaces and converting the lubricating composition into a slightly sticking and piling up sludge consisting of a complex of the formed decomposition product with the component.

4,497,721

REFRIGERATOR OIL COMPOSITION

Takao Katayama, Ichihara, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,588

Claims priority, application Japan, Nov. 17, 1982, 57-200280; Dec. 16, 1982, 57-220604

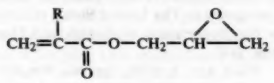
Int. Cl.³ C10M *3/18, 5/12*

U.S. Cl. 252—56 R **5 Claims**

1. A refrigerator oil composition comprising:

(1) mineral oil, synthetic oil or a mixture thereof; and

(2) (a) 15-crown-5, (b) a derivative of 15-crown-5, (c) a glycidyl compound represented by the general formula:



(wherein R is a hydrogen atom or an alkyl group containing from 1 to 5 carbon atoms), or (d) a mixture thereof.

4,497,722

COMPOSITION FOR PLASTIC MAGNETS

Michinori Tsuchida; Tokuji Abe, both of Saitama, and Hajime Kitamura, Chiba, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1984, Ser. No. 626,742

Claims priority, application Japan, Jul. 4, 1983, 58-121420; Aug. 17, 1983, 58-149910

Int. Cl.³ H01F *10/02*

U.S. Cl. 252—62.54 **8 Claims**

1. A plastic magnet composition which comprises:

(a) a thermoplastic resin as a binder: and

(b) a powder of a metallic or alloy magnet having a coating layer on the surface of the particles formed of a phosphorus-containing compound having at least one phosphorus-to-oxygen linkage in a molecule and uniformly blended with the thermoplastic resin.

4,497,723

PREPARATION OF ACICULAR, FERRIMAGNETIC IRON OXIDES

Manfred Ohlinger, Frankenthal; Guenter Vaeth, Limburgerhof; Peter Rudolf, Neuhofen; Wilhelm Sarnecki, Limburgerhof; Helmut Jakusch; Eberhard Koester, both of Frankenthal, and Milena Melzer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 508,168

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224325

Int. Cl.³ C01G *49/06, 49/08*

U.S. Cl. 252—62.56 **2 Claims**

1. A process for the preparation of an acicular ferrimagnetic iron oxide by reducing gamma-iron(III) oxide hydroxide to magnetite, at from 280° to 620° C., by means of an organic compound which is decomposable at this temperature in the presence of iron oxide, and, optionally, then oxidizing the magnetite with oxygen-containing gases, at from 150° to 450° C., to acicular ferrimagnetic iron oxide of the formula FeO_x, where x is from about 1.33 to 1.50, wherein the gamma-iron (III) oxide hydroxide is prepared in an aqueous reaction suspension by precipitation and oxidation of an aqueous iron (II) solution and wherein the organic compound used for the reduction is a non-polar glycerol ester of a fatty acid which is introduced into the aqueous reaction suspension during the preparation and growth of the gamma-iron(III) oxide hydroxide; the acicular ferrimagnetic iron oxide so prepared when incorporated into a tape effecting a magnetic tape having a narrower switching field distribution than a magnetic tape containing said acicular ferrimagnetic iron oxide prepared as above but where said organic compound is added at the end of the preparation and growth of the gamma-iron (III) oxide hydroxide.

4,497,724

SOLAR ENERGY STORAGE MATERIALS

Teijiro Kitao, Tondabayashi; Jun-ichiro Setsune, Sakai; Shoichi Ishihara, Katano, and Ryoichi Yamamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,202

Claims priority, application Japan, May 11, 1982, 57-79351

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—70 **3 Claims**

1. A solar energy storage material comprising N,N'-bis(-phenylacetyl)indigo dissolved in a polar solvent.

4,497,725

AQUEOUS BLEACH COMPOSITIONS

Eileen Smith, Chester; Doreen A. Timperley, Widnes, and Dorothy M. Titchener, Chester, all of England, assignors to Interox Chemicals Ltd., Hanover Square, England

Continuation-in-part of Ser. No. 245,140, Mar. 18, 1981, Pat. No. 4,547,199. This application Feb. 22, 1982, Ser. No. 350,572

Claims priority, application United Kingdom, Apr. 1, 1980, 8010886; Sep. 30, 1981, 8129512

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ C09K *15/06, 15/32;* **C11D** *3/39, 7/18*

U.S. Cl. 252—102 **17 Claims**

1. A liquid bleach composition comprising:

3% to 20% by weight hydrogen peroxide;

at least one base in an amount sufficient to render the composition alkaline; 5% to 20% by weight isopropanol;

a stabilising amount of a substituted amino compound having the formula $R—NR—(CH_2)_p—q—NR_2$ in which p is from 2 to 6, q is from 0 to 2, and R represents an acetate or methylene phosphonate group;

and water.

4,497,726

ELECTRODE MATERIAL

James E. Brule, South Windsor; James K. O'Neill, and David N. Palmer, both of Tolland, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 31, 1983, Ser. No. 499,234
Int. Cl.³ H01M *4/88*
U.S. Cl. 252—182.1 **14 Claims**

1. A cathode active material having the general formula $Li_xM_yM'_zO_{2-n}F_n$ wherein M is selected from the group consisting of metallic ions having a valence of +1 other than lithium and metallic radicals having a valence of +1; M' is selected from the group consisting of Fe, Co and Ni; x is 0.01 to 0.99 and y is 0.99 to 0.01, respectively; z is 0.8 to 1.2; and n is zero to 0.1.

10. A cathode active material according to claim 1 which is $Li_{0.5}Na_{0.5}CoO_2$.

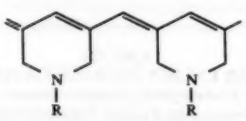
4,497,727

POLY(DIPROPARGYLAMINE)AND DERIVATIVES THEREOF PER SE AND P-DOPED AND PROCESSES FOR PREPARING SAME

Yoshiyuki Okamoto, Fort Lee, N.J., and Edward F. Hwang, Brooklyn, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,407
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 **14 Claims**

1. The process of forming an electrically conductive polymeric dipropargylamine or derivative compound having recurring structural units of the formula:



wherein R is H, C_2H_5, $(CH_3)_3C$ or

and having a conductivity at room temperature of at least $10^{-7}ohm^{-1}cm^{-1}$ which comprises doping said polymeric compound with an electron acceptor dopant.

4,497,728

CONDUCTIVE PYROLYTIC PRODUCT AND COMPOSITION USING SAME

Susumu Yoshimura, and Mutsuaki Murakami, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 247,316, Mar. 25, 1981, Pat. No. 4,401,590. This application May 19, 1983, Ser. No. 496,300
Claims priority, application Japan, Mar. 26, 1980, 55-39305; Apr. 14, 1980, 55-49376; Aug. 11, 1980, 55-110556; Aug. 11, 1980, 55-110567; Aug. 13, 1980, 55-112162
Int. Cl.³ C08G *73/08*
U.S. Cl. 252—514 **7 Claims**

1. A conductive composition comprising 10 to 50 weight percent of a film-forming polymer binder and a balance of a powder of a pyrolytic product obtained by thermally treating polyoxadiazole at a temperature ranging from 600° C. to 1000° C. in vacuo or in an inert atmosphere, the thermal treatment being maintained for a time sufficient to provide a pyrolytic product having a specific resistance of 10^{-1} ohm-cm or below.

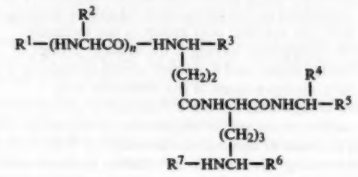
4,497,729

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi, Suita; Satoshi Yonishi, Kadoma, and Hidekazu Takeno, Tenri, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Nov. 19, 1981, Ser. No. 322,902
Claims priority, application United Kingdom, Dec. 1, 1980, 8038509; Apr. 13, 1981, 8111584
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **9 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:



wherein

R^1 is heptanoyl, stearoyl, 2-hyroxypropionyl or 2-acetoxypropionyl,

R^2 is hydrogen or methyl,

R^3 is carboxy, benzyloxycarbonyl or hydroxymethyl,

R^4 is hydrogen or methyl,

R^5 is carboxy or hydroxymethyl,

R^6 is carboxy, methoxycarbonyl, 3-t-butoxycarbonylcarbazoyl or hydroxymethyl,

R^7 is hydrogen, 3-t-butoxycarbonyl or benzyloxycarbonyl, and

n is an integer 0 or 1, with the proviso that at least one of R^3, R^5 and R^6 is hydroxymethyl.

4,497,730

METHOD FOR OBTAINING PERIPLASMIC PROTEINS FROM BACTERIAL CELLS USING CHLOROFORM

Giovanna F. Ames, Berkeley, and Sydney G. Kustu, Davis, both of Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 3, 1984, Ser. No. 596,636
Int. Cl.³ C07G *7/00*; A23J *1/18*
U.S. Cl. 260—112 R **4 Claims**

1. A method of extracting periplasmic protein comprising treating without homogenizing a cellular suspension of an organism possessing said periplasmic protein with a periplasmic protein releasing volume only of chloroform as an organic solvent for a sufficient time to release said protein and then separating said protein from said cellular suspension.

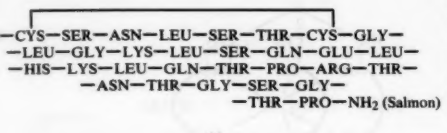
4,497,731

GLYCINE 8-DES-TYROSINE 22 CALCITONIN

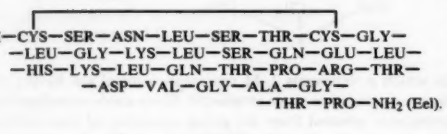
Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,618
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 T **4 Claims**

1. A peptide having the structure:



or



4,497,732

1A-ENDO-GLYCINE-CALCITONIN

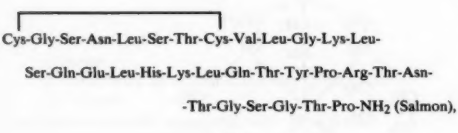
Jay K. Seyler, Bourbonnais; Glenn L. Stahl, Bradley, and Ronald C. Orlowski, Frankfort, all of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,183

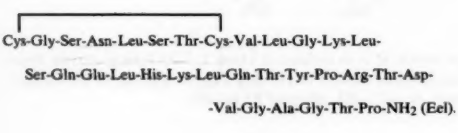
Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 T **4 Claims**

1. A peptide having the structure:



or



4,497,733

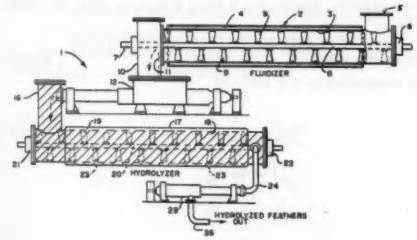
APPARATUS FOR HYDROLYZING KERATINACEOUS MATERIAL

Rowland Retrum, 2231 Sherman St., Longmont, Colo.

Division of Ser. No. 197,262, Oct. 15, 1980, Pat. No. 4,378,311, which is a continuation-in-part of Ser. No. 968,479, Dec. 11, 1978, Pat. No. 4,231,926. This application Sep. 13, 1982, Ser. No. 417,513

Int. Cl.[3] **A23J** *1/10;* **C08H** *1/06;* **C01B** *15/037*

U.S. Cl. 260—123.7 **4 Claims**



1. An apparatus for continuously hydrolyzing keratinaceous material comprising a first vessel, entry means connected with the said first vessel for continuously delivering the material into the same, agitating means provided in said first vessel for simultaneously violently agitating and moving said material through said vessel, said agitating means being rotational and capable of revolving at speeds of between about 100 to 150 rpm, heating means operatively associated with said first vessel and capable of heating any material traversing therethrough up to a temperature of less than 212° F. and without any significant build-up of pressure within said vessel, a second vessel, pump means interconnecting between the said first and second vessels and when operative capable of continuously transferring the fluidized material from the first said vessel and into the second said vessel, another agitating means provided in said second vessel and capable of revolving for agitating the material pumped therein, another heating means operatively associated with the said second vessel and capable of heating the material traversing therethrough to a temperature of between about 250° F. to 365° F. while creating a pressure therein of between about 15 to 150 psig, said pump means circumventing the passage of any second vessel generated pressure into the first said vessel, and another pump means connecting with the said second vessel and when operative providing for the continuous discharge of the now hydrolyzed material and some pressure from the said second vessel.

4,497,734

ASYMMETRICAL 1:2 CHROMIUM COMPLEXES DERIVED FROM AZO AND AZOMETHINE DYES

Winfried Mennicke, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

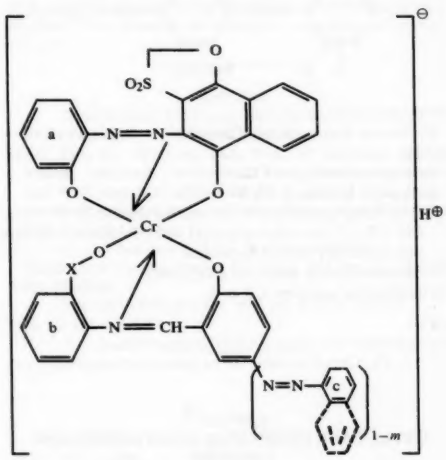
Filed Aug. 3, 1982, Ser. No. 404,805

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133505

Int. Cl.[3] **C09B** *45/06, 45/16;* **D06P** *1/10, 3/32*

U.S. Cl. 534—695 **6 Claims**

1. A dyestuff of the formula



in the free-acid form,

wherein

x=CO or direct bond,

m=0 or 1,

Y=H or NO_2

ring a is unsubstituted or substituted by SO_3H, sulfamoyl, Cl or NO_2 ring b is unsubstituted or substituted by SO_3H, sulfamoyl, Cl, NO_2 or CH_3 ring c is unsubstituted or substituted by SO_3H, sulfamoyl, Cl, CH_3or OCH_3.

4,497,735

ARYLIDE AZOPIGMENTS FORMED BY COUPLING A DIAZORYL COMPOUND WITH AN OMEGA-AMMONIUMACETOACTIC ACID DERIVATIVE

Steffen C. Olsen, Farum, and Arne Vinther, Koge, both of Denmark, assignors to Kemisk Vaerk Koge A/S, Koge, Denmark

Filed Sep. 28, 1982, Ser. No. 425,829

Claims priority, application United Kingdom, Oct. 5, 1981, 8129997

Int. Cl.³ C09B *29/01, 29/33, 35/10;* **D06P** *1/44*

U.S. Cl. 534—603 **2 Claims**

1. An azopigment which is the coupling product of 3,3'-dichlorobenzidine tetrazonium chloride and omega-trimethylammonium acetoacetanilide or a mixture of omega-trimethylammonium acetoacetonilide and acetoanilide.

2. An azopigment which is the coupling agent of 4-methyl-2-nitroaniline diazonium chloride and dimethylcocosammonium chloride in admixture with acetoanilide.

4,497,736

AZO DYESTUFFS

Winfried Kruckenberg, and Karl H. Schündehütte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

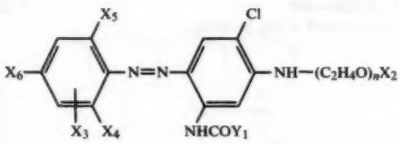
Filed Nov. 17, 1978, Ser. No. 962,253

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751784

Int. Cl.³ C09B *29/01, 29/085;* **D06P** *1/18, 3/54*

U.S. Cl. 534—855 **2 Claims**

1. Azo dyestuffs of the formula



wherein

X_2 denotes hydrogen, C_1–C_4-n-alkyl or C_1–C_4-alkylcarbonyl,

X_3 denotes hydrogen or Cl,

X_4 denotes hydrogen, Cl, Br or CN,

X_5 and X_6 independently of one another denote Cl, Br, NO_2, CN, CF_3, C_1–C_2-alkylsulphonyl or hydrogen, but do not simultaneously denote hydrogen,

Y_1 denotes methyl, ethyl, or propyl and

n denotes the numbers 4, 5 or 6.

4,497,737

METAL CAGE COMPLEXES AND PRODUCTION THEREOF

Alan M. Sargeson; Anthony J. Herlt, both of Curtin, and John M. Harrowfield, Kardinya, all of Australia, assignors to The Australian National University, Australia

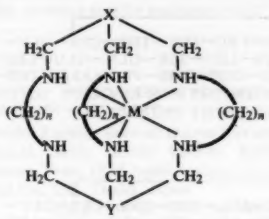
Continuation of Ser. No. 954,314, Oct. 24, 1978, abandoned. This application Mar. 8, 1982, Ser. No. 355,663

Claims priority, application Australia, Oct. 26, 1977, PD2201; Oct. 26, 1977, PD2202

Int. Cl.³ C07D *487/08*

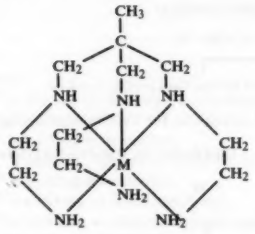
U.S. Cl. 260—239 BC **4 Claims**

1. A metal ion coordination complex of the formula:



in which n represents 2; M represents a metal ion having at least two oxidation states in which it forms stable coordination complexes selected from the group consisting of ions of Co, Rh, Pt, Cr, Cu, Re, Mo, W, Ni, V and Fe; X represents ≡C—CH_3; and Y represents ≡N or ≡C—R‴ wherein R‴ represents hydrogen, halogen, nitro, nitroso, amino, hydroxy or alkyl having 1 to 6 carbon atoms.

4. A process for the preparation of a complex according to claim 1 wherein X represents ≡C—CH_3, which comprises the steps of reacting a metal chelate of 1,9-diamino-5-(methyl)-5-(4-amino-2-azabutyl)-3,7-diazanonane of the formula:



in which M is as defined in claim 1, with formaldehyde and a nucleophile capable of yielding a capping group of the formula ≡N or ≡C—R^4, wherein R^4 is NO_2.

4,497,738

ANALOGOUS COMPOUNDS OF CEPHALOSPORINS, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masashi Hashimoto, Takarazuka, and Matsuhiko Aratani, Suita, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

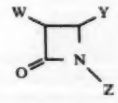
Division of Ser. No. 128,507, Mar. 10, 1980, Pat. No. 4,339,449. This application Mar. 15, 1982, Ser. No. 358,431

Claims priority, application United Kingdom, Mar. 27, 1979, 7910719

Int. Cl.³ C07D *205/08, 513/04;* **C07F** *1/110*

U.S. Cl. 260—239 A **4 Claims**

1. A compound of the formula:



(II)

in which

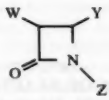
W is an acylamino group,

Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,

Z is a group of the formula:

wherein
R^3 is carboxy or esterified carboxy group, and
Z^1 is isocyano,
or pharmaceutically acceptable salts thereof.

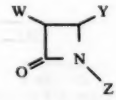
2. A compound of the formula:



in which
W is an acylamino group,
Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,
Z is a group of the formula:

wherein
R^3 is carboxy or esterified carboxy group, and
Z^1 is azido,
or pharmaceutically acceptable salts thereof.

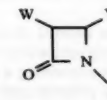
3. A compound of the formula:



in which
W is an acylamino group,
Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,
Z is a group of the formula:

wherein
R^3 is carboxy or esterified carboxy group, and
Z^1 is amino,
or pharmaceutically acceptable salts thereof.

4. A compound of the formula:



in which
W is an acylamino group,
Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,
Z is a group of the formula:

wherein
R^3 is carboxy or esterified carboxy group, and
Z^1 is formamido,
or pharmaceutically acceptable salts thereof.

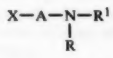
4,497,739

SYNTHESIZING THIOCARBAMIC ACID ESTERS

Villiam Giroldini, and Carlo Neri, both of S. Donato Milanese, Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Feb. 3, 1983, Ser. No. 463,553
Claims priority, application Italy, Feb. 9, 1982, 19518 A/82
Int. Cl.³ C07C *155/02;* **C07D** *213/02*
U.S. Cl. 260—239 BF **13 Claims**

1. A process for the preparation of esters of thiocarbamic acids comprising the step of reacting carbon monoxide and organic disulphides having the formula R″—S—S—R‴, wherein R″ and R‴, are equal to or different from one another, are aliphatic or aromatic hydrocarbon radicals, with amine compounds having the general formula:



wherein R and R^1, are equal to or different from one another, and can be hydrogen, alkyl, aryl, or alkaryl radicals with the proviso that at least one of R and R^1 is hydrogen, A is an unsubstituted arylene radical, or an arylene radical that is substituted with halogens, hydrocarbon radicals, alkoxy groups or a straight or branched chain alkylene radical having from 1 to 15 carbon atoms; and X is hydrogen, —NH_2, or H_2N—Z in which the bivalent function Z is phenylene or C_{1-4} alkylene in the presence of a catalyst consisting of a metallic selenide.

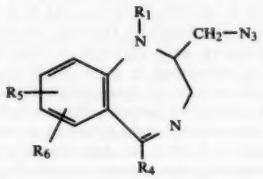
4,497,740

2-AZIDOMETHYL-1,4-BENZODIAZEPINE COMPOUNDS

Horst Zeugner, Hanover, Fed. Rep. of Germany; Dietmar Römer, Allschwil, Switzerland; Hans Liepmann, Hanover, and Wolfgang Milkowski, Burgdorf, both of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,303
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124013
Int. Cl.³ C07D *401/04, 403/04, 405/04, 409/04*
U.S. Cl. 260—244.4 **1 Claim**

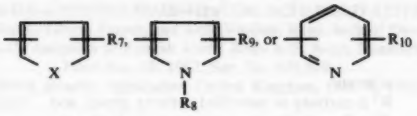
1. A 2-azidomethyl-1H-2,3-dihydro-1,4-benzodiazepine compound corresponding to the general formula IV



IV

wherein
R_1 is hydrogen, lower alkyl, lower alkenyl or cyclopropylmethyl;

R_4 is



a b c

wherein

X is oxygen or sulphur;

R_7 is hydrogen, halogen, lower alkyl, lower alkoxy or nitro;

R_8 is hydrogen or lower alkyl;

R_9 is hydrogen or lower alkyl;

R_{10} is hydrogen, chlorine or lower alkyl;

R_5 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono- or dialkylamino, lower monoalkylanoylamino, lower N-alkyl-N-alkanoylamino or lower alkanoyloxy; and

R_6 is hydrogen, halogen, lower alkyl, or lower alkoxy; or

R_5 and R_6 are bonded to adjacent carbon atoms and together denote methylenedioxy or ethylenedioxy;

and the optical isomers and acid addition salts of said compound.

4,497,741

WATER-SOLUBLE ZINC AND ALUMINIUM PHTHALOCYANINES

Gerd Hölzle, Liestal; Mirella Miotto, Basel; Gerhard Reinert, Allschwil, and Rudolf Polony, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

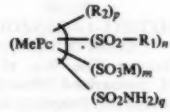
Filed Dec. 1, 1982, Ser. No. 445,784

Claims priority, application Switzerland, Dec. 9, 1981, 7871/81

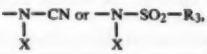
Int. Cl.³ C09B *47/04*

U.S. Cl. 260—245.77 **8 Claims**

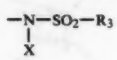
1. A phthalocyanine compound of the formula



wherein MePc is the zinc or aluminum phthalocyanine ring system, M is hydrogen or the equivalent of a salt-forming cation, R_1 is M or a group of the formula



wherein X is hydrogen or ammonium or the equivalent of a monovalent, divalent or trivalent metal ion, and R_3 is C_1-C_8-alkyl, unsubstituted or substituted by hydroxy, alkoxy, halogen, cyano, or carbalkoxy, aminocarbonyl or dialkylamino; aryl, unsubstituted or substituted by alkyl or alkoxy, nitro, haloalkyl, halogen, alkoxycarbonyl, cyano, alkylsulfonyl, acylamino, carboxy and derivatives thereof, sulfo and derivatives thereof, acyloxy, trifluoromethyl or dialkylamino, or an unsubstituted or substituted or fused 5- or 6-membered aromatic heterocyclic ring containing one or two nitrogen, oxygen or sulfur heteroatoms which may be unsubstituted or substituted in the same manner as the aryl groups R_3; each R_2 is independently halogen, aryl or cyano, n has any value from 1 to 4, each of m and q has any value from 0 to 3 and p has any value from 0 to 4, while the sum of n+m and n+q in each case is 1 to 4 and q is only different from 0 if R_1 is a group of the formula



and m is 0.

4,497,742

ISOMERIZATION OF β-LACTAM COMPOUNDS

Setsuo Harada, Kawanishi; Shigetoshi Tsubotani, Suita, and Mitsuko Asai, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

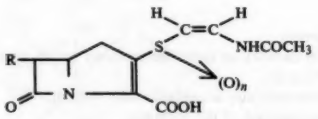
Filed Feb. 24, 1982, Ser. No. 351,927

Claims priority, application Japan, Mar. 4, 1981, 56-31866; Jan. 22, 1982, 57-9249

Int. Cl.³ C07D *487/04*; A61K *31/40*

U.S. Cl. 260—245.2 T **3 Claims**

1. A process for the production of a compound of the formula



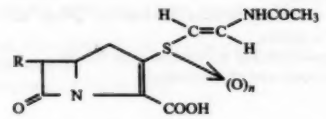
wherein R is a group of the formula

wherein

R_1 is H or methyl,

R_2 is (1) H, (2) OH, (3) R_3COO— in which R_3 is R_4 or —NHR_4 wherein R_4 is (a) alkyl of 1 to 6 carbons, (b) alkenyl of up to 6 carbons, (c) phenyl, or (d) alkyl of 1 to 6 carbons substituted by phenyl, lower alkyl phenyl, C_{1-4} alkoxyphenyl, halophenyl or phenyloxy or (4) R_5O_3SO— wherein R_5 is H or lower alkyl, and

n is 0 or 1 or a physiologically acceptable salt thereof which comprises subjecting a compound of the formula



wherein R and n are as defined above to isomerization by treatment in an organic solvent which is nonpolar or of weak polarity or such solvents containing a small proportion of an organic solvent of strong polarity, said treatment being with a chloride or bromide of a quaternary ammonium compound having a total of 18 to 30 carbon atoms for the four substituents, the treatment being carried out at a temperature of from about room temperature up to about the boiling point of the solvent.

4,497,743

ORGANOSOLUBLE SALTS OF MANGANESE, PROCESS OF PREPARATION OF SAME

Guy C. S. Brisset, 16 rue des Sittelles, St. Just 27200 Vernon, and Michel C. Mas, 7 rue J. F. Millet, 78200 Mantes La Ville, both of France

Filed Jun. 29, 1981, Ser. No. 278,304
Int. Cl.³ C07F *13/00*
U.S. Cl. 260—429 R 7 Claims

1. An organosoluble salt of manganese useful as a combustion additive to liquid fuels and as a drying additive for liquid paints and varnishes, consisting of a complex organometallic salt being the reaction product of an organic or organometalloidic acid having at least one acid function and having from 8 to 30 carbon atoms in each molecule, said acid being selected from the group consisting of oleic acid, linoleic acid, fatty acids of tall oil, resin acids, dodecylbenzene sulfonic acid, dinonylphenoxy phosphoric acid and napthenic acids, reacted with a complex manganous ammine wherein the ammine is derived from ammonia and the ratio of the number of acid equivalents to the number of manganese atoms is between 0.2 and 2.0.

4,497,744

GENTISIC ACID SALTS AS RADIOGRAPHIC SCANNING AGENT STABILIZERS

Mahdi B. Fawzi, Cincinnati, Ohio, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 892,245, Mar. 31, 1978, Pat. No. 4,233,284.
This application Nov. 3, 1980, Ser. No. 202,962
Int. Cl.³ C07F *7/22*
U.S. Cl. 260—429.7 2 Claims

1. The water-soluble compound stannous gentisate.
2. The water-soluble compound chromous gentisate.

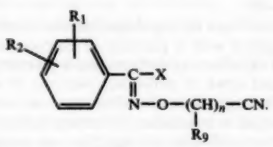
4,497,745

COMPOSITIONS, WHICH PROMOTE PLANT GROWTH AND PROTECT PLANTS BASED ON OXIDE ETHERS AND OXIME ESTERS

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 129,499, Mar. 11, 1980, Pat. No. 4,466,822, which is a division of Ser. No. 881,953, Feb. 27, 1978, abandoned.
This application Sep. 30, 1982, Ser. No. 430,061
Claims priority, application Switzerland, Mar. 2, 1977, 2606/77; Feb. 8, 1978, 1348/78
Int. Cl.³ C07C *121/66*
U.S. Cl. 260—465 D 3 Claims

1. A compound of the formula



wherein

R_1 is hydrogen, halogen or nitro,

R_2 is hydrogen or halogen,

X is $-COOCH_3$, $-COOC_2H_5$, $-CONH_2$ or $-CONHCH_3$,

n is the integer 1 or 2, and

R_9 is hydrogen or methyl.

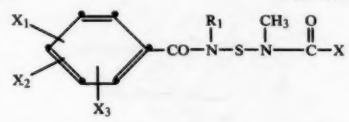
4,497,746

BENZAMIDOSULFENYLCARBAMOYL HALIDES

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 305,306, Sep. 24, 1981, Pat. No. 4,413,008.
This application Sep. 23, 1982, Ser. No. 422,332
Claims priority, application Switzerland, Oct. 2, 1980, 7362/80; Jun. 2, 1981, 3597/81
Int. Cl.³ C07C *83/10*
U.S. Cl. 260—544 C 2 Claims

1. A compound of the formula



wherein R_1 is C_1–C_{10} alkyl, X is fluorine or chlorine, and each of X_1, X_2 and X_3 is hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 haloalkyl.

4,497,747

PROCESS FOR MAKING ACETIC ANHYDRIDE

Wilhelm Vogt, Hürth; Hermann Glaser, Erftstadt, and Erhard Jägers, Bornheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,283
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231154
Int. Cl.³ C07C *51/54, 51/56*
U.S. Cl. 260—546 4 Claims

1. A process for making acetic anhydride by reacting methyl acetate or dimethylether with carbon monoxide unter practically anhydrous conditions at temperatures of 120° to 270° C., under pressures of 1 to 500 bars in the presence of a catalyst system containing nickel or a nickel compound, an organic iodine or bromine compound as well as a tertiary or quaternary organic phosphorus compound, which comprises using a catalyst system containing a titanium or zirconium compound as an additional constituent.

4,497,748

PREPARATION OF LITHIUM INITIATOR FOR THE PREPARATION OF STAR POLYMERS

Francis J. Vitus; Ivan G. Hargis, both of Tallmadge; Russell A. Livigni, and Sundar L. Aggarwal, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 282,671, Jul. 13, 1981, Pat. No. 4,409,368.
This application Sep. 22, 1982, Ser. No. 421,699
Int. Cl.³ C07F *1/02*
U.S. Cl. 260—665 R 10 Claims

1. The method which comprises under an inert atmosphere adding with agitation a tertiary alkyl amine to a RLi compound in a hydrocarbon solvent at a temperature sufficiently low to prevent thermal decomposition of the RLi compound, said tertiary amine having from 2 to 4 carbon atoms in the alkyl group, said R being selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals having from 2 to 20 carbon atoms and mixtures thereof, and the mol ratio of said tertiary amine to the RLi compound being about 4:1, and then adding to the resulting mixture with agitation in the same temperature range a diethylenically unsaturated aromatic compound selected from the group consisting of divinyl benzene and diisopropenyl benzene and mixtures thereof in a hydrocarbon solvent, the mole ratio of the RLi compound to the aromatic compound being about 1:0.83, the rate of addition of said aromatic compound to said mixture

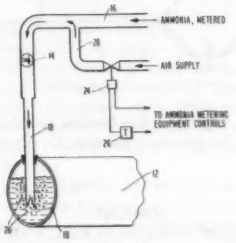
being sufficient to provide without substantial polymerization a hydrocarbon soluble, gel free and stable initiator suitable for anionic polymerization having an average of from about 4 to 9 C-Li sites and a VPO $\overline{Mn}$ of from about 750 to 4,000.

4,497,749

CHECK VALVE FOR AMMONIA INJECTOR APPARATUS

Theodore R. Strauss, Wayne, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 1, 1983, Ser. No. 556,802
Int. Cl.³ C02F *1/50*; F16K *15/14*
U.S. Cl. 261—64 B **1 Claim**



1. Injection apparatus for injecting gas under pressure into water flowing in a conduit, said apparatus including

pipe means for transporting said pressurized gas into said water,

a check valve mounted within said pipe means above said conduit, said check valve comprising

a cylindrical body portion having a plurality of spaced recessed annuli in circumscribed relationship therearound,

an axially disposed bore in said body communicating with said gas transported within said pipe means, said bore extending downwardly from an upper portion of said body to a lower portion where lowermost of said annuli circumscribes said body,

a plurality of spaced ports disposed in said body communicating between said bore and each of said annuli,

each of said annuli characterized by sharp right angle edges defining its outermost and innermost diameter and being devoid of taper therebetween,

an O-ring disposed around each of said annuli in pressure sealing relationship, each of said O-rings effecting line contact only with said outermost sharp edges of each of said annuli, each of said O-rings having a thickness diameter slightly greater than width of said recessed annuli,

whereby said pressurized gas stretches said O-rings to place them in tension to permit passage of said pressurized gas at points along said line contact between said O-rings and recessed annuli,

means to shut-down flow of gas in said pipe means, and

other means for automatically feeding pressurized purge air into said pipe means upstream of said check valve upon said shut-down.

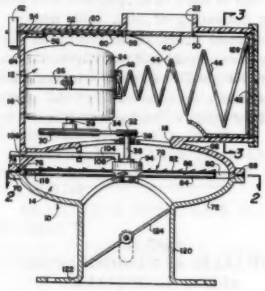
4,497,750

FUEL IMPACT DEVICE

Edward Simonds, 1505 E. Kenosha, Broken Arrow, Okla. 74012

Continuation of Ser. No. 420,357, Sep. 17, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,149
Int. Cl.³ F02M *17/16*
U.S. Cl. 261—64 C **7 Claims**

1. A fuel impact device for an internal combustion engine comprising air chamber means, air-fuel mixture chamber means in open communication with the air chamber means of the internal combustion engine, air valve means provided in the air chamber means for selectively admitting air into the interior thereof, rotatable fuel accelerator means journalled between the air chamber means and air-fuel mixture chamber means, internal fuel receiving chamber means provided in the fuel accelerator means, impact ring means disposed around the fuel accelerator means and concentrically arranged with respect thereto to provide an air passageway therebetween, fuel inlet means provided in the fuel accelerator means and in intimate communication with the fuel receiving chamber means for delivery of the fuel directly thereto, fuel discharge means provided around the outer periphery of the fuel accelerator means for radially outward discharge of the fuel from the fuel receiving chamber means for impinging fuel against the impact ring means, air foil means on the fuel accelerator means extending into the air passageway for providing a void area in the air moving therethrough at the point wherein the fuel is



discharged, and the air valve means comprises housing means slidably disposed within the air chamber means and having port means providing open and closed positions for the air valve for controlling the quantity of air admitted into the air chamber upon reciprocation of the housing means within the air chamber, the housing means having one end open for receiving a helical spring means therein and one end closed for engagement by the helical spring means for constantly urging the housing means toward the closed position therefor, the helical spring means being responsive to the demand of the internal combustion engine for reciprocation the housing means within the air chamber for admitting the optimum quantity of air into the air chamber in accordance with the engine demand.

4,497,751

ZIG-ZAG PROFILE PACKING AND METHOD OF MAKING

Raymond Pluss, Klein Andelfingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 14, 1982, Ser. No. 398,186
Claims priority, application Switzerland, Jul. 30, 1981, 4924/81
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—94 **13 Claims**

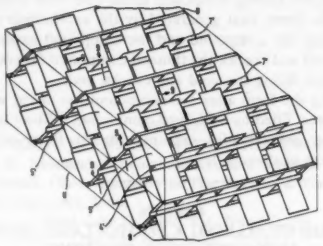
12. A layer having a zig-zag shaped profile to define a plurality of flank planes with a plurality of contiguous transverse rows of pairs of deflecting surfaces and a plurality of bridges connecting said rows of deflecting elements to each other, each said deflecting surface of a respective row being disposed in angular relation to an adjacent deflecting surface of said row with every other deflecting surface of a row projecting from said flank planes in parallel relation to the adjacent flank plane.

13. A process for making a regular packing comprising the steps of

forming a flat sheet with a plurality of transverse rows of spaced apart tabs to define an alternating sequence of integral deflecting surfaces and bendable deflecting surfaces;

deforming the flat sheet to form a zig-zag shaped profile

having a plurality of flank planes with two adjacent rows of said surfaces being disposed in a respective flank plane; and



bending each tab of each row outwardly of said respective flank plane into parallel relation to an adjacent flank plane.

4,497,752

X-SHAPED PACKING LAYERS AND METHOD OF MAKING

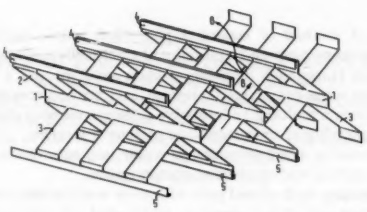
Max Huber, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 9, 1982, Ser. No. 396,720

Claims priority, application Switzerland, Jul. 30, 1981, 4926/81

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—95 **6 Claims**



1. A packing for a mass transfer, direct heat exchange and mixing comprising a plurality of X-shaped profiled layers disposed at the outer longitudinal edges thereof in side-by-side parallel relation with each other, each said layer having a centrally disposed bridge, a first row of deflecting surfaces extending from one side of said bridge in alternating angular relation and a second row of deflecting surfaces extending from an opposite side of said bridge in alternating angular relation.

6. A process of making a multi-layer packing comprising the steps of

forming a plurality of flat sheet-like bodies each with a centrally disposed bridge, a first row of discrete deflecting surfaces extending from one side of said bridge and a second row of discrete deflecting surfaces extending from an opposite side of said bridge;

bending alternating deflecting surfaces in each said row of each body relative to said respective bridge to define generally X-shaped profiles; and

disposing said profiles at the outer longitudinal edges thereof in contiguous side-by-side parallel relation to define a plurality of open-ended crossing flow channels.

4,497,753

CORRUGATED SHEET PACKING AND METHOD OF MAKING

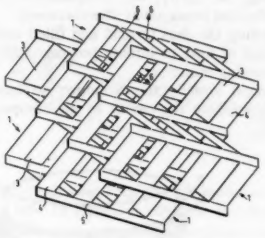
Felix Streiff, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 13, 1982, Ser. No. 397,775

Claims priority, application Switzerland, Jul. 30, 1981, 4925/81

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—95 **5 Claims**



1. A packing comprising a plurality of layers defining crossing deflecting surfaces disposed at an inclination to a given flow direction therethrough, each said layer being of zig-zag shape defining a plurality of flanks with alternating troughs and apices and having a plurality of longitudinal rows of alternating deflecting surfaces and gaps and a plurality of longitudinal bridges connecting said rows of deflecting surfaces; said deflecting surfaces and gaps being disposed in and across said flanks and said bridges being alternately in said troughs and said apices between a respective gap and a transversely adjacent deflecting surface, at least two of said layers being disposed one above another to define crossing flow channels.

5. A process of forming a packing comprising the steps of

forming a flat sheet-like body with a plurality of longitudinal rows of alternating deflecting surfaces and gaps and a plurality of longitudinal bridges connecting said rows;

shaping said flat body into a corrugated later having said rows within inclined flanks of said shaped layer with each deflecting surface and each gap of a respective row extending across a respective flank and said bridges being disposed at alternating troughs and apices thereof between a respective gap and a transversely adjacent deflecting surface; and

placing a plurality of said corrugated layers in contiguous relation with said layers being disposed one above the other to form a packing with flow channels.

4,497,754

CASTING PLASTIC LENSES FROM THERMOHARDENING MONOMER WITH COMPENSATION FOR POLYMER EXPANSION AND SHRINKAGE

Giorgio M. Padoan, Milan, Italy, assignor to Societa' Italiana Lenti S.I.L.-S.r.l., Pordenone, Italy

Continuation of Ser. No. 61,882, Jul. 30, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,825

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.4 **13 Claims**

1. A process of continuous compensation casting a lens of a resinous thermohardening plastics material, said process comprising the steps of:

(1) forming a tubular sleeve of a substantially nondeformable plastic material which is chemically compatible with the thermohardening plastics resin and which sleeve is thermally stable at polymerization temperatures;

(2) positioning two mold halves within said sleeve at a predetermined distance apart from each other defining, together with the adjacent internal lateral wall of the sleeve be-

tween the two mold halves, a cavity with a diameter the same as each of the mold halves,

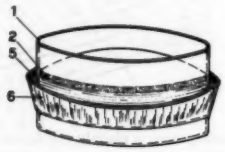
each mold half retained in position within the sleeve by friction between the mold half rim and the adjacent sleeve wall with which it is in contact;

(3) providing a compensation reservoir external of the cavity and in fluid communication therewith through at least one preformed passageway therebetween;

(4) introducing a flowable, catalyst-containing thermohardening, homogeneously-polymerizing monomer into the cavity via the preformed passageway and completely filling the cavity, the compensation reservoir and the preformed passageway therebetween;

(5) heating the thus formed and filled mold assembly for a period of time to initiate polymerization of the thermohardening monomer,

wherein initially the monomer so heated expands and flows from the cavity to the compensation reservoir,



then later during the polymerization the polymerizing monomer contracts and flows from the compensation reservoir into the cavity as required to compensate for monomer shrinkage within the mold, until the gel stage is reached,

the heating being continued until the gel stage of polymerization is reached and flow between the compensation reservoir and the cavity stops;

(6) continuing the heating of the mold assembly until the monomer is completely polymerized, while concurrently moving the mold halves towards each other as required to compensate for the continuing shrinkage of the polymerizing monomer, the shrinkage of the monomer under polymerization from the gel stage to final polymerization being solely compensated by moving the mold halves towards each other; and thereafter

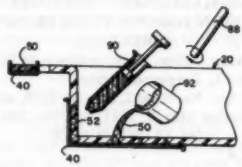
(7) removing the two mold halves from the so produced lens when polymerization of the monomer is completed.

4,497,755

METHOD FOR REPAIRING ARTICLES

Dever J. Korsyn, 904 69th Ave., Philadelphia, Pa. 19126

Filed Aug. 31, 1982, Ser. No. 413,264
Int. Cl.³ B29H *5/16*; B29D *11/00*
U.S. Cl. 264—1.7 **6 Claims**



1. A method for repairing a broken plastic article adapted for diffuse light transmission, the article having a body broken to define an area having at least one open void through the article and cracks adjacent the void, the void and cracks to be filled and supported, the method comprising the steps of:

placing a form on a surface of the broken plastic article, the form covering a first side of said open void;

preparing an adhesive sealing compound having a dye for diffuse light transmission and a curing agent to promote curing by exothermic reaction, the adhesive sealing compound being a type that becomes thinner upon exothermic heating prior to gelation;

applying the sealing compound to the void from a side opposite the form, heat generated by the exothermic reaction thinning the compound and the compound expanding in the void and cracks, the thinned compound flowing freely into and filling the void and cracks; and,

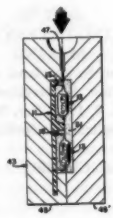
removing the form after the compound has cured whereby said area, filled by said dyed compound, diffuses light in a manner substantially indistinguishable from remaining portions of the article.

4,497,756

METHOD OF MAKING A PHOTOFLASH ARTICLE USING INJECTION MOLDING

Andre C. Bouchard, Peabody; George J. English, Reading; Harold H. Hall, Jr., Marblehead, and Thomas J. Sententes, Wakefield, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 5, 1981, Ser. No. 308,637
Int. Cl.³ B29C *6/00*
U.S. Cl. 264—1.9 **7 Claims**



1. A method of making a photoflash article including a substrate member and a plurality of electrically-activated photoflash lamps each including a glass envelope and a pair of lead-in wires projecting therefrom, said method comprising:

injection molding an insulative substrate member defining a plurality of open-sided compartments therein;

providing a pair of openings within said substrate adjacent each of said open-sided compartments;

inserting each of said pairs of lead-in wires within a respective pair of said openings within said substrate to orient each of said photoflash lamps within a respective one of said compartments such that the glass envelope of each of said lamps is spacedly positioned from the walls of said substrate, said lead-in wires being inserted through the open end of each of said respective compartments and passing through said openings and thereafter being bent back against an exterior surface of said substrate;

positioning said insulative member having said photoflash lamps oriented therein within an injection mold apparatus;

injecting a predetermined quantity of a thermoplastic or thermosetting resin capable of forming a light-transmitting polymer member upon solidification thereof within said mold apparatus to occupy each of said compartments and totally surround the glass envelopes of each of said photoflash lamps, said thermoplastic or thermosetting resin being injected at a temperature within the range of about 200 to about 300 degrees Farenheit and at a pressure of from about 2000 to about 8000 pounds per square inch, said lead-in wires bent against said substrate assisting in retaining said glass envelopes in said spaced positioning relationship during said injecting of said resin;

solidfying said quantity of resin to form said light-transmitting polymer about each of said glass envelopes, said resin

bonding to said substrate member to define said photoflash article; and

removing said article from said mold apparatus.

4,497,757

ENERGY EFFICIENT HYDRATION PROCESS

Wayne E. Beimesch, Covington, Ky., and Thomas C. Hortel, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 31, 1983, Ser. No. 462,293

Int. Cl.³ B29C *6/00, 23/00*

U.S. Cl. 264—13 **13 Claims**

1. An energy efficient process for hydrating a mixture of materials in a spray tower comprising:

A. forming a water-wet mixture of hydratable sodium sulfate and a nonhydratable material at a temperature which is higher than the 32° C., temperature of hydration of sodium sulfate;

B. forming the mixture of (A) into spheroidal units of from 50 to 2,000 microns via a spray nozzle;

C. decreasing the temperature of the units of (B) to 12°–22° C. via inlet air;

D. drying the units of (C) at a temperature high enough to remove free water and water of hydration for a final moisture content of less than about 1%.

4,497,758

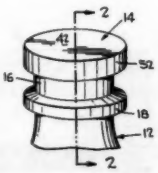
METHOD OF FORMING BOTTLE NECK FINISH FOR ACCEPTING A SNAP-IN CLOSURE

Richard E. Clark, Merrimack, N.H., assignor to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 259,205, Apr. 30, 1981,. This application Jun. 16, 1983, Ser. No. 505,037

Int. Cl.³ B06B *3/00*

U.S. Cl. 264—23 **2 Claims**



1. A method of adapting a tubular neck portion of a plastic container for the reception of a closure, said method comprising the step of supporting the container, providing a tool having an end bore of a size to receive in telescoped relation a free end of a container neck portion and a central sizing plug in said end bore, telescoping the tool and the container neck portion with an extreme end of the container neck portion engaging an end wall of the end bore, and continuing the telescoping of the tool and the container neck portion with the free end of the container neck portion being gradually radially inwardly deformed to form a radially inwardly directed flange and the flange is shaped about the centerpost.

4,497,759

DRAWING OF POLYOXYMETHYLENE USING DIELECTRIC HEATING

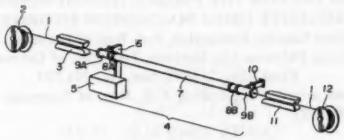
Koichi Nakagawa, Ibaraki; Osamu Maeda, Seki, and Shinzo Yamakawa, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Musashino, Japan

Filed Dec. 23, 1982, Ser. No. 452,862

Claims priority, application Japan, Dec. 24, 1981, 56-208031; Dec. 24, 1981, 56-208032; Dec. 13, 1982, 57-218152

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—26 **6 Claims**



6. A process for producing an ultrahigh-modulus polymer wherein a rod or tube of polyoxymethylene is drawn under dielectric heating, comprising the step of continuously drawing said rod or tube at a highest ambient temperature ranging within 120° to 170° C. at a feed speed per furnace length of not more than 0.3 $min.^{-1}$ while maintaining the product of the oscillation frequency and the square of the electric field strength within a range of from 9.8×10^{13} to 7.4×10^{14} $Hz\cdot V^2/cm^2$ and maintaining the ratio of the take-up speed to feed speed at a ratio of not less than 12 times.

4,497,760

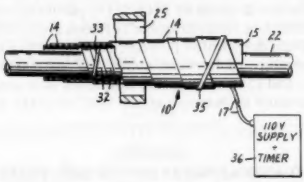
CABLE SHEATH REPAIR METHOD

Mark D. Sorlien, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 2, 1983, Ser. No. 471,519

Int. Cl.³ B29C *27/24;* **B32B** *35/00*

U.S. Cl. 264—36 **1 Claim**



1. A method of repairing damage to the sheath of a communications cable, comprising the steps of:

applying a spacer material to the cable,

wrapping a heat shrinkable tape around the communications cable in a spiral starting on said spacer with partial overlapping of the adjacent turns and in sufficient length along the cable to bridge across the damaged area of the sheath.

removing said spacer material,

providing a flexible strip heater having a base with a uniform width along a majority of its length, a resistance heating element insulated within said base and extending along the length of said base and across a uniform portion of its width, and an insulating layer overlying only a portion of the width of said base along the length thereof and having a width equal to that of said portion containing said resistance heating element, said insulating layer having a generally rectangular transverse cross-section.

wrapping said flexible strip heater around said heat shrinkable material in a spiral with overlapping of the heater portion having said insulating layer on the portion of the previous turn not having said insulating layer to cause said

insulating layer to substantially abut in adjacent turns of the heater,

sliding said spiral wound heater and heat shrinkable tape together along the cable to accurately position said spiraled tape to bridge the damaged area of the sheath,

activating said heating element to cause said heat shrinkable tape to shrink tightly onto said communications cable to cover the damaged portion of the sheath, and

removing said flexible strip heater.

4,497,761

PROCESS FOR THE PRODUCTION OF SINTERED MAGNESITE FROM MAGNESIUM HYDROXIDE

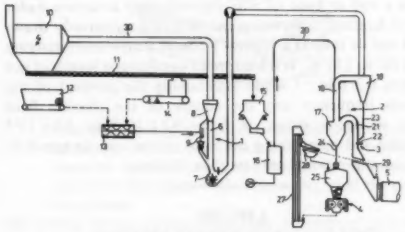
Hans-Gerd Schulte, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,733

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020881

Int. Cl.³ C04B *33/32, 35/04*

U.S. Cl. 264—66 **16 Claims**



1. A process for the production of sintered magnesite from magnesium hydroxide filter cake feedstock, said process comprising the successive steps of (1) reducing the moisture content of said feedstock to below its thixotropy value; (2) size reducing said feedstock to produce powder-form material having a particle size distribution lying in the shaded area of the particle size diagram of FIG. 2; (3) calcining said powder-form material at a temperature of between about 650° to 1050° C. to produce dehydrated powder; (4) briquetting sid powder at a temperature of between about 400° to 800° C. to form briquettes; and (5) sintering said briquettes in a sintering zone at a temperature of between about 1800° to 2000° C.

4,497,762

METHOD AND APPARATUS FOR THE PRODUCTION OF JOINTING BANDS WITH EMBEDDED REINFORCING PROFILES WHICH RUN AT RIGHT ANGLES TO THE LONGITUDINAL AXIS OF THE BAND

Winfried Meister, Hordenbachstrasse 70, 5600 Wuppertal, Fed. Rep. of Germany, assignor to Winfried Meister, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,022

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 3209357

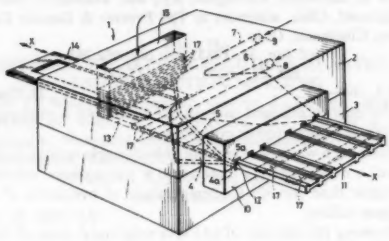
Int. Cl.³ B29F *3/10*

U.S. Cl. 264—172 **5 Claims**

1. A method of extrusion for the production of a plastic band profile with reinforcing profiles disposed and enclosed at right angles to the longitudinal axis of the band and arranged at a distance one from the other, whereby two streams of plastic are brought together at a sharp angle to the longitudinal axis of extrusion and where the profiles are strokwise pushed from behind and in the direction of extrusion into the region of the angle where the two streams meet and where the profiles are enveloped and taken with the plastic streams and extruded into the shape of the band profile, characterized in that:

the two plastic streams are produced independently one from the other in two parallel planes, one lying above the other and the flow parameters of the two plastic streams being controllable independently one from the other; and the two streams are pre-profiled before they meet and while they are still in a plastic condition whereby the strands which are produced from the streams possess a width which conforms with the width of the final band profile and possess a height which provides a small over-dimension with respect to one-half the thickness of the profile band.

3. Extrusion apparatus for the production of a plastic band profile according to the method whereby two streams of plastic material are brought together at a sharp angle to the longitudinal axis of extrusion, the extrusion apparatus comprising an extruder head divided longitudinally into two halves and stream channels one running above and one below the longitudinal plane division of the extruder head, the stream channels running together at a sharp angle to the plane of the longitudinal division and in the region of the angle where the stream channels meet is a slot-like channel of a pusher arrangement in the direction of extrusion ending in front of the region of the angle, characterized in that the two stream channels **4**, **5** lead from respective extrusion channels **6**, **7** which leads from a side face of the extruder head **1** and on the inlet opening **8**, **9** of which an extruder may be connected.



4,497,763

METHOD FOR INJECTION MOULDING COATED PARTS FROM PLASTICS MATERIAL

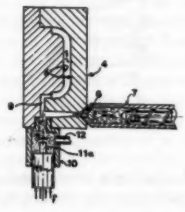
Bernard Monnet, Bellignat, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Jul. 1, 1981, Ser. No. 279,380

Claims priority, application France, Jul. 21, 1980, 80 16085

Int. Cl.³ B29C *5/08*; B29D *9/00*; B29F *1/00*

U.S. Cl. 264—255 **2 Claims**



1. A method for the injection molding of coated parts from plastics material wherein a plastics material is injected into a mold cavity comprising introducing a charge of liquid coating material having a relatively low viscosity through an orifice into a conduit connected to the bottom of a mold cavity and closing said orifice, then injecting a plastics material having a viscosity much greater than the viscosity of the liquid coating material into said conduit at a point in said conduit below said coating material such that the injection of said plastics material

into the mold cavity forces the liquid coating material upwardly into the mold cavity ahead of said plastics material, the liquid coating material being maintained in contact with said plastics material by means of gravity and rising in the cavity with the plastics material so that the well of the cavity will be uniformly coated with a thin film of said coating material.

4,497,764

EPOXY RESIN COMPOSITIONS OF ENHANCED CREEP RESISTANCE

S. Frank Rey, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1982, Ser. No. 428,832
Int. Cl.³ E04B *1/54;* F16B *12/06*
U.S. Cl. 264—261 **4 Claims**

1. A method of filling the voids between the surface of a support floor and a contiguous bottom surface of a planar member supporting heavy equipment comprising the steps of (1) grouting fully said voids with an epoxy resin composition comprising:

(a) an epoxy resin having at least two

groups per molecule;

(b) a reactive diluent represented by the diglycidyl ether of cyclohexane dimethanol;

(c) a converter represented by triethylene tetraamine in sufficient amount to cure said epoxy resin at about room temperature; and,

(d) a major amount of an aggregate having a particulate size ranging from 5 to 400 mesh;

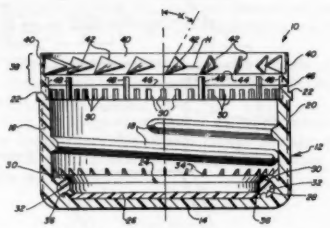
(2) curing said composition to hardness.

4,497,765

PROCESS FOR MAKING A CLOSURE

Sheldon L. Wilde; Thomas J. McCandless, both of Crawfordsville, and Robert M. Saunders, Ladoga, all of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Continuation-in-part of Ser. No. 77,584, Sep. 21, 1979, Pat. No. 4,343,754. This application Jun. 22, 1982, Ser. No. 390,346
The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.
Int. Cl.³ B29C *13/02;* B29D *9/08*
U.S. Cl. 264—268 **52 Claims**



1. A process for making a composite closure for a container, comprising the steps of:

forming a plastic cap having a top wall portion, an internally threaded annular skirt portion, and an inwardly extending, annular liner-retaining lip;

depositing a quantity of moldable plastic in said cap; and

forming a liner including a generally inwardly facing sealing surface with said moldable plastic so that said moldable plastic flow against said lip and said lip retains said liner within said cap.

4,497,766

METHOD AND APPARATUS FOR MOLDING PLASTIC WHEELS

Jan G. Olsson, SjögÅngen 6, 421 71 Västra Frölunda, and Lars Erik Samuelsson, Hedängen 5, 433 70 Partille, both of Sweden

PCT No. PCT/SE82/00083, § 371 Date Dec. 13, 1982, § 102(e) Date Dec. 13, 1982, PCT Pub. No. WO82/03594, PCT Pub. Date Oct. 28, 1982
PCT Filed Mar. 23, 1982, Ser. No. 453,889
Claims priority, application Sweden, Apr. 14, 1981, 8102395
Int. Cl.³ B29C *1/00*
U.S. Cl. 264—328.8 **2 Claims**

1. A method of manufacturing a wheel of plastic material, for vehicles or the like, said wheel having an even number of spokes in excess of two, a hub and a rim, said spokes, hub and rim together constituting an integral unit, comprising the steps of:

preparing a mold corresponding in shape to said wheel so as to have a cavity comprising spoke portions, a hub and a rim and having inlets located at points in every second spoke portion, and injecting the plastic material into said inlets, whereby the flows of injected material join each other in the spoke portions free from inlets and adjacent the rim.

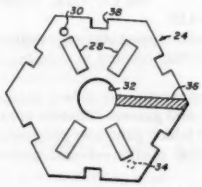
2. A mold for manufacturing a wheel of plastic material, said wheel having spokes, a hub and a rim forming an integral unit, said mold having a cavity of a form corresponding to the wheel with an even number of spoke-forming portions in excess of two, and with inlets emptying into every second spoke-forming portion at a location so that flows of plastic material injected into said inlets will meet in the spoke forming portions free from inlets and adjacent the rim.

4,497,767

COMPRESSION HUB WITH EDDY CURRENT PREVENT MEANS

Albert L. Gaines, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 11, 1980, Ser. No. 120,192
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—142 **3 Claims**



1. A compression hub for a fusion reactor system for purposes of providing resistance to the forces tending to draw the magnets in the fusion reactor system together toward a common point comprising a multiplicity of compression plates arranged in a layered assembly and interconnected so as to form a unitary structure, each of said compression plates being

of a polygonal shape and having a first opening formed at the center thereof, each of said compression plates further having a second opening operative as a flow passage for coolant formed therein adjacent one of the corners defined by the polygonal shape of each of said compression plates, a first set and a second set of shear members associated with each of said compression plates, said first set of shear members including a first shear member supported on one side of said first opening of each of said compression plates and a second shear member supported on another side of said first opening of each of said compression plates, said second set of shear members including a third shear member supported on one side of said first opening of each of said compression plates and a fourth shear member supported on another side of said first opening of each of said compression plates, each of said compression plates having an interruption formed therein extending from said first opening formed therein to the circumference of said compression plate, said interruption having a piece of insulation positioned therein and dimensioned so as to completely fill said interruption, said insulation filled interruption of each of said compression plates being operative to impede the circulation through each of said compression plates as well as through the entire compression hub of eddy currents induced therein, said multiplicity of compression plates when arranged in a layered assembly being positioned relative to each other such that said first set of shear members of each of said compression plates lie in a first common plane that passes through said first opening of each of said compression plates and extends the length of the compression hub, said second set of shear members of each of said compression plates lie in a second common plane that extends the length of the compression hub and intersects said first common plane at the center of said first opening formed in each of said compression plates, said second opening of each adjacent pair of said multiplicity of compression plates lie in a third common plane that intersects both said first common plane and said second common plane at the center of said first opening formed in said adjacent pair of compression plates, said interruption formed in each of said compression plates defines a fourth common plane that extends the length of the compression hub and intersects said first common plane, said second common plane and said third common plane at the center of said first opening formed in each of said compression plates.

4,497,768

APPARATUS AND METHOD FOR QUANTITATIVELY EVALUATING TOTAL FISSILE AND TOTAL FERTILE NUCLIDE CONTENT IN SAMPLES

John T. Caldwell, Los Alamos; Walter E. Kunz, Santa Fe, both of N. Mex.; Michael R. Cates, Oak Ridge, Tenn., and Larry A. Franks, Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 7, 1982, Ser. No. 395,893
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—153 **19 Claims**

1. A method for quantitatively evaluating total fissile and total fertile nuclide content in samples, which comprises the steps of:

a. generating repetitively pulsed gamma radiation;

b. directing said gamma radiation onto a partially transparent target which generates photoneutrons while allowing a substantial portion of said gamma radiation to pass through;

c. thermalizing said photoneutrons such that their reaction probability with fissile isotopes is substantially enhanced;

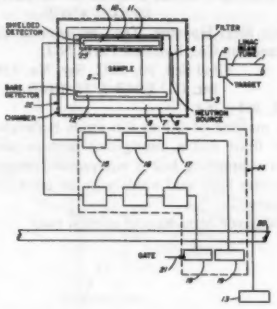
d. causing said gamma radiation and said thermalized photoneutrons to impinge upon a sample;

e. measuring the flux of said thermalized photoneutrons in the vicinity of the sample during time intervals in between the termination of a particular gamma radiation pulse and the commencement of the following one;

f. measuring the intensity of said gamma radiation in the vicinity of the sample;

g. measuring prompt and delayed fast neutron emission from the sample resulting from photofission of fertile and fissile nuclides interacting with said impinging gamma radiation, and from fission of fissile nuclides capturing said thermalized photoneutrons during said time intervals;

h. accumulating a plurality of said prompt and delayed fast



neutron emission measurements, and a plurality of said thermalized neutron flux measurements until statistically significant measurements are obtained; and

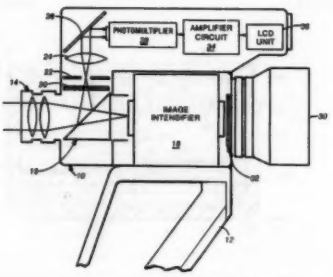
i. relating said accumulated emitted prompt and delayed fast neutron measurements normalized by said accumulated thermalized neutron flux measurements and said intensity of said gamma radiation to known gamma and neutron cross sections for the fissile and fertile nuclides contained in the sample to obtain the quantitative assay.

4,497,769

PORTABLE INSTRUMENT FOR INSPECTING IRRADIATED NUCLEAR FUEL ASSEMBLIES

Nicholas Nicholson; Edward J. Dowdy; David M. Holt, all of Los Alamos, and Charles J. Stump, Jr., Santa Fe, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 13, 1982, Ser. No. 377,773
Int. Cl.³ G21C *17/00*; G01T *1/22*
U.S. Cl. 376—257 **12 Claims**



1. An apparatus for inspecting irradiated nuclear fuel assemblies in a water-filled storage pond by measurement of induced Cerenkov radiation, comprising:

field lens means for providing a beam containing an image of a selected field of view;

beam splitting means for dividing said beam into first and second substantially identical sub-beams;

image intensifying means for electronically amplifying said

first sub-beam and forming an amplified image viewable in real time of said field of view; and

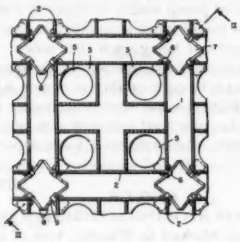
photometer means positioned to receive said second sub-beam and provide an electrical signal representative of the integrated intensity of said sub-beam, said photometer means including digital readout means for providing a numerical display of the value of said intensity.

4,497,770

STORAGE STRUCTURE FOR NUCLEAR WASTE

Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Salzgitter AG, Salzgitter, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,831
Int. Cl.³ G21C *19/40*
U.S. Cl. 376—272 **8 Claims**



1. A storage structure for storing waste of nuclear plants comprising a plurality of tubular waste storage members, each of said plurality of tubular members being adapted to form one or a plurality of waste storing chambers wherein

(a) each of said plurality of tubular storage members is provided near the bottom thereof with at least three horizontal bolts for locking and supporting the storage members in a fixed position for storing waste of all nuclear plants the longitudinal axes of the bolts intersecting at a common point of said axes; wherein

(b) a plurality of support plates for each of said plurality of tubular storage members is provided at the lower end of each of said plurality of storage members; wherein

(c) each of said plurality of support plates has a plurality of upstanding portions equal in number to the number of bolts on one of said plurality of storage tubes; wherein

(d) each of said plurality of upstanding portions of said plurality of support plates is provided with an open recess for insertion into one of said plurality of bolts; wherein

(e) each recess is wide at the open end thereof and bounded by downward slanting surfaces of decreasing spacing; and wherein

(f) each recess has a lower closed end which forms a substantially circular bolt-bearing surface coaxial with one of said plurality of bolts

(g) wherein the longitudinal axis of each bolt intersects the center longitudinal axis of said tubular storage member, and wherein each bolt is disposed at a corner of said tubular storage member.

4,497,771

LOW TANTALUM CONTENT COBALT-BASE ALLOY

Robert E. Spencer, and Donald L. Clarke, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 7, 1983, Ser. No. 472,702
Int. Cl.³ C22C *19/07*
U.S. Cl. 420—440 **10 Claims**

1. A composition of matter consisting essentially of the following elements in the following amounts expressed in weight percent:

Chromium—from about 25 to about 36,
Nickel—from about 3.5 to about 13,
Wolfram—from about 3 to about 10.5,
Tantalum—up to about 1.2,
Zirconium—from about 0.005 to about 0.2,
Silicon—from about 0.05 to about 2,
Carbon—from about 0.35 to about 0.95,
Boron—from about 0.001 to about 0.1,
Iron—from about 0.01 to about 12,
Cobalt—balance,

the weight ratio of zirconium to boron being within the range of from about 0.05 to about 35.

4,497,772

REACTIVE METAL-PALLADIUM-COPPER-NICKEL BRAZING ALLOYS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 422,625, Sep. 24, 1982,. This application Mar. 14, 1983, Ser. No. 475,265
Int. Cl.³ C22C *19/00, 9/06*
U.S. Cl. 420—457 **4 Claims**

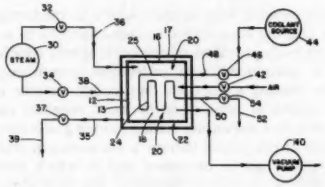
1. A ductile brazing foil having a composition consisting essentially of from about 0.05% to about 5% by weight of a reactive metal selected from the group consisting of titanium, vanadium, zirconium and mixtures thereof, from about 5% by weight to about 30% by weight of palladium and the balance is a mixture of copper and nickel wherein the minimum amount of copper is about 20% by weight of the total alloy, the minimum amount of nickel is about 105 by weight of the total alloy, the maximum amount of copper is about 70% by weight of the total alloy and the maximum amount of nickel is about 50% by weight of the total alloy.

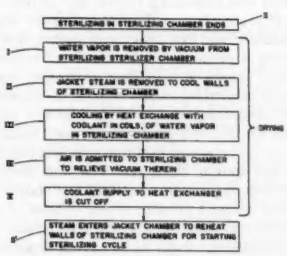
4,497,773

PROCESS AND APPARATUS FOR SHORTENING THE DRYING STAGE OF A STEAM STERILIZATION CYCLE

Christopher J. Kuelzow, Little Silver; Edward M. Kackos, and Francis J. Murray, both of Belmar, all of N.J., assignors to Vernitron Corporation, Lake Success, N.Y.

Continuation-in-part of Ser. No. 241,247, Mar. 3, 1981, abandoned. This application Sep. 6, 1983, Ser. No. 529,494
Int. Cl.³ A61L *2/00*
U.S. Cl. 422—26 **3 Claims**




STERILIZING IN STERILIZING CHAMBER ENDS
WATER VAPOR IS REMOVED BY VACUUM FROM STERILIZING STERILIZER CHAMBER
JACKET STEAM IS REMOVED TO COOL WALLS OF STERILIZING CHAMBER
COOLING BY HEAT EXCHANGE WITH COOLANT IN COILS, OF WATER VAPOR IN STERILIZING CHAMBER
AIR IS ADMITTED TO STERILIZING CHAMBER TO RELIEVE VACUUM THEREIN
COOLANT SUPPLY TO HEAT EXCHANGER IS CUT OFF
STEAM ENTERS JACKET CHAMBER TO REHEAT WALLS OF STERILIZING CHAMBER FOR STARTING STERILIZING CYCLE
DRYING

1. A process in a sterilization cycle for reducing the drying

time of steam sterilized wrap articles enveloped by water vapor in a sterilizing chamber having walls surrounded by a jacket chamber containing steam, the wrap articles being supported and spaced from the chamber floor, comprising the simultaneous steps of:

withdrawing steam from said jacket chamber to cool said walls of said sterilizing chamber;

removing water and water vapor by vacuum from said sterilizing chamber; and

circulating cold coolant in a heat exchanger located inside said sterilizing chamber completely below the wrap articles therein, so that heat exchange takes place in said sterilizer and said coolant condenses said water vapor to water in said sterilizing chamber below and out of direct contact with the wrap articles and in the vicinity of said heat exchanger thereby minimizing the time period required to dry said wrap articles.

4,497,774

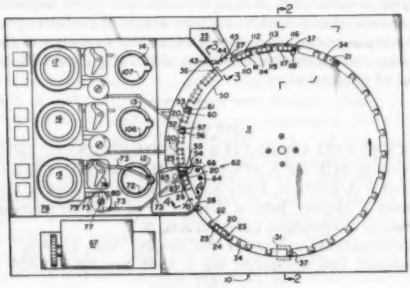
COAGULATION INSTRUMENT FOR PERFORMING CLOTTING TESTS

Richard E. Scordato, Scarsdale, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Continuation of Ser. No. 275,352, Jun. 19, 1981, abandoned. This application Mar. 8, 1983, Ser. No. 473,235

Int. Cl.³ G01N *35/06, 33/86*

U.S. Cl. 422—73 **9 Claims**



1. A coagulation instrument adapted to randomly perform different clotting time tests on plasma samples in accordance with a test code provided on the cuvette into which a plasma sample is introduced, said instrument comprising: sensing means for reading a test code on a coded cuvette; a first dispensing station at which one or more reagents can be dispensed, said first dispensing station having guide means with a plurality of nozzle guides therein; a test station at which one or more reagents can be dispensed and at which clotting of a reagent plasma mixture is detected, said test station having guide means with a plurality of nozzle guides therein; means for moving coded cuvettes sequentially from said sensing means to said first dispensing station and thereafter to said test station; first reservoir and dispensing means adapted to dispense a reagent at said first dispensing station; first pump means for delivering a predetermined volume of reagent from said first reservoir means at said first dispensing station; second reservoir and dispensing means adapted to dispense a reagent at said first dispensing station or at said test station; second pump means for delivering a predetermined volume of reagent from said second reservoir means at said first dispensing station or at said test station; third reservoir and dispensing means adapted to dispense a reagent at said test station; third pump means for delivering a predetermined volume of reagent from said third reservoir means at said test station; said first, second, and third dispensing means each having separate dispensing nozzles with said first dispensing nozzle being adapted to be connected to and cooperate with the first dispensing station guide means, the second dispensing nozzle being adapted to be connected to and cooperate with the first dispensing station guide means or the test station guide means, and the third dispensing nozzle being adapted to be connected to and cooperate with the test station guide means; circuit means responsive to the dispensing of a reagent into a plasma sample at said test station for detecting clot formation in the reagent plasma mixture and for measuring the time period between reagent dispensing at said test station and clot formation; and means responsive to the code sensed on a coded cuvette by said sensing means for controlling said first pump means to either dispense or not dispense a reagent to a cuvette from said first reservoir means when the cuvette is moved to said first dispensing station and for controlling said second pump means to either dispense or not dispense a reagent to a cuvette from said second reservoir means when the cuvette is moved to said first dispensing or test station depending on which station guide means the second dispensing nozzle is connected to and for controlling said third pump means to dispense a reagent from said third reservoir means when a cuvette is moved to said test station, the arrangement being such that when reagents are added to a cuvette at said first dispensing station and at said test station in response to the code on the cuvette an APTT test or a double reagent PT test is performed and when a reagent is added to a cuvette only at said test station in response to the code on the cuvette a single reagent PT test is performed.

4,497,775

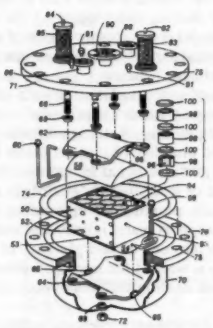
APPARATUS FOR STORING HYDROGEN ISOTOPES

John W. McMullen; Michael G. Wheeler, both of Los Alamos, N. Mex.; Hatice S. Cullingford, Houston, Tex., and Robert H. Sherman, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 10, 1982, Ser. No. 406,828

Int. Cl.³ G21F *9/02*

U.S. Cl. 422—159 **7 Claims**



1. Apparatus for storing hydrogen isotopes as hydrides without requiring any external cooling means, said apparatus comprising:

(a) a copper block having a multiplicity of first boreholes extending therethrough, into which hydriding material is to be placed, said copper block having a mass sufficiently large to safely absorb the heat of hydriding given off upon complete hydriding of said hydriding material, a pair of copper plenum chambers covering the openings of said first boreholes at opposite ends of said block, a pair of thick stainless steel end clamps cooperably shaped to conform to and reinforcably back said copper plenum chambers, and means for clamping said end clamps together so as to compress and contain said plenum chambers and said copper block therebetween, whereby the copper block and copper plenum chambers are provided with sufficient yield strength to safely contain pressurized gas at elevated operating temperatures;

(b) an external heating means for adjustably heating said copper block, wherein said external heating means is in operable communication with said copper block;

(c) a sensing means in operable communication with said copper block and with said external heating means, wherein said sensing means is used for detecting whether hydriding or dehydriding is taking place;

(d) a first conduit means in operable communication with a first one of said plenum chambers, wherein said first conduit means is operably connected to a first end of each of said first boreholes in said copper block;

(e) a second conduit means in operable communication with a second one of said plenum chambers, wherein said second conduit means is operably connected to a second end of each of said first boreholes in said copper block; and

(f) a support means for maintaining said hydriding material within said first boreholes and for allowing hydrogenous gases to pass through said first boreholes.

4,497,776

ARRANGEMENT FOR INTERCONNECTING CONDUITS

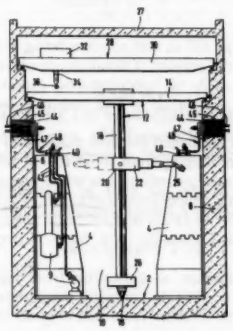
Klaus Blaseck, Burgdorf, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 531,179

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234513

Int. Cl.³ G21F *9/14*

U.S. Cl. 422—159 **7 Claims**



1. In a processing cell such as a large-area cell or the like for reprocessing irradiated nuclear reactor fuel elements, the large-area cell having an interior wall which is penetrated from the outside by the end portions of a plurality of conduits and the cell containing a rack in which process components and connecting conduits for the latter are arranged, a conduit interconnecting arrangement for interconnecting the connecting conduits of the rack with respective ones of the conduit end portions penetrating the interior wall of the cell, the conduit interconnecting arrangement comprising:

two terminal blocks each having a plurality of passages formed therein;

a plurality of conduit segments tightly connecting said blocks with each other so as to communicate with corresponding ones of said passages in each of said blocks;

the plurality of conduits outside of the cell being arranged so as to cause the respective conduit end portions thereof penetrating the cell wall to define a first predetermined pattern;

the free ends of the passages in one of the blocks terminating in a pattern corresponding to said first pattern;

first interface means for joining said free ends of said one block with corresponding ones of the wall conduit end portions;

the connecting conduits of the rack being arranged to cause the respective conduit end portions thereof to define a second predetermined pattern;

the free ends of the passages of the other one of said blocks terminating in a pattern corresponding to said second pattern;

second interface means for joining said free ends of said other block with corresponding ones of the rack conduit end portions;

said two terminal blocks and said conduit segments conjointly defining a portable unit removable from and returnable to a rest position whereat the unit connects the wall conduit end portions with respective ones of the rack conduit end portions;

first centering means for centering said one block with respect to the wall conduit end portions so as to bring the passages of the one block into alignment with corresponding ones of the wall conduit end portions when said unit is placed in said rest position; and,

second centering means for centering said other one of said blocks with respect to the rack conduit end portions so as to bring the free ends of the passages of said other block into alignment with corresponding ones of the rack conduit end portions when said unit is placed in said rest position.

4,497,777

APPARATUS FOR PRODUCING MONOCRYSTALLINE SILICON

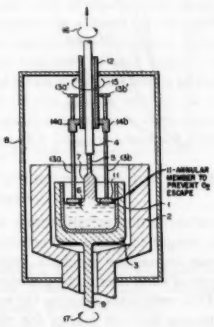
Masakatu Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 22, 1982, Ser. No. 370,913

Claims priority, application Japan, Apr. 28, 1981, 56-63249

Int. Cl.³ C30B *15/00*

U.S. Cl. 422—249 **2 Claims**



1. An apparatus for producing a pull of monocrystalline silicon containing a high, uniform concentration of oxygen comprising:

a crucible for holding silicon melt;

means for rotating said crucible;

a heater means arranged outside said crucible for heating the silicon melt held in said crucible;

a buoyant, quartz annular member to be floated on the silicon melt, said annular member being capable of both supplying oxygen to the silicon melt to increase the concentration of oxygen in the melt and preventing the escape of oxygen from the silicon melt;

said quartz annular member having an aperture which is larger than the diameter of the pull of monocrystalline silicon to be produced so that the pull of monocrystalline silicon will not contact or react with the annular member and having an outer periphery slightly smaller than the inner periphery of the crucible to permit the annular member to slide within the crucible;

pulling means for dipping a monocrystalline seed in the

silicon melt through the aperture of said quartz annular member, rotating the monocrystalline seed while it is in the melt, and pulling the monocrystalline seed out of the melt as it is rotated to form a pull of monocrystalline silicon containing a high, uniform concentration of oxygen;

annular member rotation means independent of said silicon melt to rotate the quartz annular member in a direction opposite to the direction of rotation of the monocrystalline seed to obtain a more uniform temperature profile and oxygen distribution in the silicon melt; and wherein the diameter of the aperture of said annular member is not less than 1.2 times the diameter of the pull of monocrystalline silicon to be produced.

4,497,778

MICROBIAL LEACHING OF SULPHIDE-CONTAINING ORES

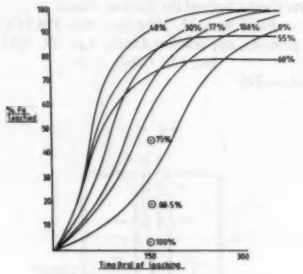
Frederick D. Pooley, Holmacre, United Kingdom, assignor to University College Cardiff Consultants Limited, Cardiff, United Kingdom

Continuation-in-part of Ser. No. 365,958, Jun. 4, 1982, abandoned. This application Feb. 7, 1984, Ser. No. 577,884

Claims priority, application United Kingdom, Apr. 6, 1981, 8110736; Apr. 7, 1981, 8110861; Mar. 3, 1982, 8208091; Mar. 30, 1982, 8209248

Int. Cl.³ C01G *5/00*

U.S. Cl. 423—27 **19 Claims**



1. A process of extracting metals from a material containing at least 10% by weight of pyrite and selected from the group consisting of ores containing sulphide, concentrates of such ores and mixtures of such ores and/or concentrates by microbial leaching which comprises roasting the material before said microbial leaching to convert part of the pyrite to pyrrhotite and thus remove part of the sulphur which is present as pyrite with substantially no metal oxide formation, the conversion corresponding to removal of at least 10% but not more than 50% of the sulphur present in the pyrite, and only thereafter leaching the thus roasted ore by treatment with bacteria, to extract said metals.

4,497,779

PRODUCTION OF POTASSIUM HEXAFLUOTITANATES USING DILUTE HYDROFLUORIC ACID

Marcy J. Kramer, Arvada, Colo.; William C. Warneke, Lakeland, Fla.; Gustavo A. Meyer, Creve Coeur, Mo., and Mahesh C. Jha, Arvada, assignors to Amax Inc., Greenwich, Conn.

Filed Oct. 14, 1983, Ser. No. 541,830

Int. Cl.³ C01G *23/02*

U.S. Cl. 423—72 **11 Claims**

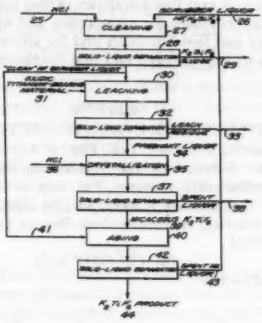
1. A process for the recovery of fluorine from waste solutions of dilute aqueous hydrofluoric acid and for the production of a commercially useful product of K_2TiF_6 which comprises,

providing a waste solution of said dilute hydrofluoric acid containing silicon in the form of H_2SiF_6 as in impurity, the amount of HF in said solution ranging from about 3% to about 38% by weight,

adding to said solution a source of potassium ions at least stoichiometrically sufficient to precipitate said silicon as K_2SiF_6 and stoichiometrically sufficient for the subsequent production of K_2TiF_6,

separating said precipitated K_2SiF_6 from said solution to provide a substantially clean waste solution,

mixing said clean waste solution with an amount of an oxidic titanium material containing about 25% to 60% by weight of titanium to form a slurry thereof,



the amount of HF in said solution being at least stoichiometric to the amount of titanium present and ranging up to about 25% of stoichiometric excess sufficient to effect the dissolution of said titanium-containing material,

subjecting said contained titanium material to dissolution at a temperature ranging from about 100° F. to boiling in the presence of said potassium ions while vigorously stirring said slurry at a temperature within said range for a time at least sufficient to effect dissolution of substantially all of said contained titanium and form a pregnant liquor thereof,

causing said titanium to crystallize from said solution as K_2TiF_6 by cooling to ambient temperature, and then separating said solution from said crystals of K_2TiF_6.

4,497,780

METHOD AND APPARATUS FOR REMOVING ARSENIC FROM AN ARSENIC-CONTAINING MATERIAL

Ihsan Barin, Aachen-Lau; Michael Gamroth, Cologne, both of Fed. Rep. of Germany; Rolf Hesse, Mexico City, Mexico, and Soegianto Wirosoedirdjo, Cologne, Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 230,429, Feb. 2, 1981, abandoned. This application Nov. 1, 1983, Ser. No. 546,647

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003635

Int. Cl.³ C01B *27/00, 29/00*

U.S. Cl. 423—88 **4 Claims**

1. A method for the removal of arsenic compounds from an arsenic-containing material which comprises:

calcining said arsenic-containing material in the presence of carbon in a reducing atmosphere to drive off a gas consisting mainly of As_4,

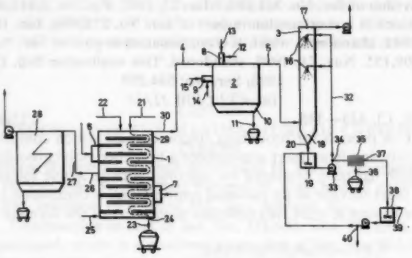
delivering the gaseous As_4 into a reaction space,

introducing controlled amounts of a sulfur carrier with oxygen and a carbon carrier with oxygen into said reaction space,

maintaining a temperature between 900° and 1200° K. in said reaction space with oxygen potentials and sulfur potentials

therein leading to the reaction of As_4 in a gas/gas reaction to form As_4S_4,

cooling the gaseous As_4S_4 in a cooling zone by contact with a wash water to form a solid arsenic sulfide (As_2S_3) concentrate which precipitates in said wash water,



filtering out the precipitated arsenic sulfide from the wash water, and

chemically neutralizing the separated wash water.

4,497,781

MANUFACTURE OF MAGNESIUM HYDROXIDE

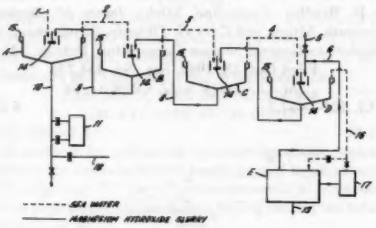
Gerald Spoors, Peterlee, and Kenneth W. Pearce, Hartlepool, both of England, assignors to Steetley Refractories Limited, England

Filed Nov. 16, 1982, Ser. No. 442,114

Claims priority, application United Kingdom, Nov. 17, 1981, 8134642

Int. Cl.³ C01F *5/22*

U.S. Cl. 423—164 **8 Claims**



1. A method for making magnesium hydroxide which comprises treating brine with an adsorptive magnesium hydroxide in an amount such that the ratio of $Mg(OH)_2$ to Mg^{++} in the brine, expressed as gMgO/l, is between 1.5:1 to 2:1, whereby at least part of the boron ions contained in the brine are adsorbed on to the adsorptive magnesium hydroxide, the brine being mixed countercurrently with the adsorptive magnesium hydroxide in a series of stages such that at each stage the brine is successively contacted with adsorptive magnesium hydroxide from a succeeding stage and there is recovered from the final stage a brine of reduced boron ion content, reacting the brine of reduced boron ion content with alkali to precipitate a low boron magnesium hydroxide and recovering the low boron magnesium hydroxide.

4,497,782

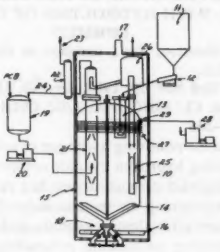
METHOD FOR DESTROYING TOXIC ORGANIC CHEMICAL PRODUCTS

Samuel G. Howell, 4666 Aston Dr., Cincinnati, Ohio 45244, and William R. Birchall, 55596 Country Club Rd., South Bend, Ind. 46619, assignors to S. Garry Howell; Lloyd Watson, both of Cincinnati, Ohio; William R. Birchall, South Bend, Ind. and Larry Allen, Ft. Mitchell, Ky.

Continuation-in-part of Ser. No. 437,434, Oct. 28, 1982,. This application Jan. 16, 1984, Ser. No. 570,853

Int. Cl.³ C01D *3/00*

U.S. Cl. 423—184 **15 Claims**



1. In a method for destroying a toxic organic chemical product wherein said toxic product is contacted with a molten mixture of an alkali metal hydroxide and an alkali metal nitrate to form an alkali metal salt as a product of reaction with said hydroxide, an organic intermediate reaction product also being produced,

the improvement which comprises,

maintaining a mol ratio of said nitrate to said hydroxide in said molten mixture of at least 2:1, the proportion of said nitrate in said mixture further being sufficiently high to provide a low viscosity of said mixture so that a large portion of said alkali metal salt settles as solid salt particles to the bottom of said molten mixture,

reacting said organic intermediate rection product with said nitrate to form CO, CO_2, or a mixture thereof, and water, and

removing said solid salt particles from said molten mixture at the bottom thereof.

4,497,783

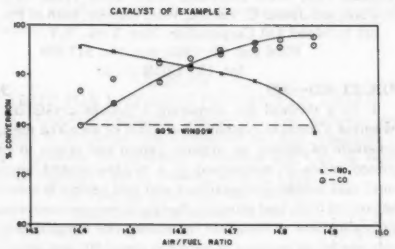
EXHAUST EMISSION CATALYST

William A. Barber, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 293,644, Aug. 17, 1981, abandoned. This application Aug. 5, 1982, Ser. No. 405,469

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—213.5 **9 Claims**



1. In a process of catalytic conversion of internal combustion engine exhaust, including catalytic oxidation of CO and hydro-

carbon components and catalytic reduction of NO_x components in said emissions, wherein the catalyst comprises platinum with or without palladium and with or without rhodium on a refractory support in amounts effective for the defined oxidation and reduction, the improvement wherein the AF window for said catalyst is broadened by at least 0.25 AF unit by presence in said catalyst of at least one member selected from the group consisting of sodium and potassium.

4,497,784

SOLUTION REMOVAL OF HCN FROM GASEOUS STREAMS, WITH HYDROLYSIS OF THIOCYANATE FORMED

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 29, 1983, Ser. No. 556,255
Int. Cl.³ C01C *3/00, 1/02;* C01B *17/16*
U.S. Cl. 423—236 **6 Claims**

1. A process for removing hydrogen cyanide from a gaseous stream containing hydrogen cyanide comprising

(a) contacting said gaseous stream in a contact zone with a solution containing ammonium polysulfide under conditions to convert hydrogen cyanide, and producing a solution containing ammonium polysulfide and ammonium thiocyanate, and a gas stream having reduced hydrogen cyanide content;

(b) removing solution containing ammonium polysulfide and ammonium thiocyanate from the contact zone, and hydrolyzing the ammonium thiocyanate in the removed solution to produce ammonia, hydrogen sulfide, and carbon dioxide.

4,497,785

PRODUCTION OF RARE EARTH COMPOUNDS

George L. Tilley, Costa Mesa, and Allen W. Doty, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 18, 1983, Ser. No. 553,436
Int. Cl.³ C01F *17/00*
U.S. Cl. 423—263 **42 Claims**

1. A method for preparing high-density rare earth carbonate which comprises admixing, with agitation, an aqueous solution containing rare earth ions and an aqueous solution containing bicarbonate or carbonate ions, in the presence of added rare earth carbonate crystals, and separating rare earth carbonate from the aqueous solution.

4,497,786

DEAGGLOMERATION OF POROUS SILICEOUS CRYSTALLINE MATERIALS

Pochen Chu, West Deptford, N.J.; Albin Huss, Jr., Chadds Ford, and James C. Vartuli, West Chester, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,598
Int. Cl.³ C01B *33/28*
U.S. Cl. 423—329 **9 Claims**

1. In a method for preparing a porous crystalline zeolite wherein a mixture containing sources of an alkali metal oxide, an oxide of silicon, an organic cation and water in predetermined ratios is maintained at a predetermined temperature until said zeolite is crystallized and said zeolite is subsequently separated from said mixture, the improvement comprising after crystallization is complete increasing the temperature of said mixture by an increase of between about 50° and about 100° F. for a period of time sufficient to effect deagglomeration of said zeolite prior to separating said crystallized zeolite from said mixture.

4,497,787

BRANCHED POLYCARBOSILANES AND THEIR USE IN THE PRODUCTION OF SILICON CARBIDE

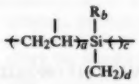
Curtis L. Schilling, Jr., Croton-On-Hudson; Thomas C. Williams, Ridgefield, and John P. Wesson, Croton-On-Hudson, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 361,106, Mar. 23, 1982, Pat. No. 4,414,403, which is a continuation-in-part of Ser. No. 272,900, Jun. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 209,151, Nov. 21, 1980, abandoned. This application Sep. 21, 1983, Ser. No. 534,299
Int. Cl.³ C10B *31/36*
U.S. Cl. 423—345 **2 Claims**

1. A process for producing silicon carbide which comprises pyrolyzing in an inert atmosphere a branched polycarbosilane which has been produced by reacting, with an active metal in an inert solvent at an elevated temperature, a compound system having at least two different monomers of the formula (I)

$$(CH_2{=}CH)_aR_bSiX_c(CH_2X)_d \qquad (I)$$

wherein R is lower alkyl, X is halo, a is 0 or 1, b is 0–3, c is 0–4, d is 0–4, a+b+c+d totals 4, a+d totals at least 1, and where at least one of said monomers is characterized by a+c+d totals 3 or 4, said compound system being selected such that its average molar functionality is at least 2.3, a plurality of silyl units are branching sites in the polymer backbone, and the formation of silicon-carbon bonds is favored, said branched polycarbosilane comprising more than one unit of the formula



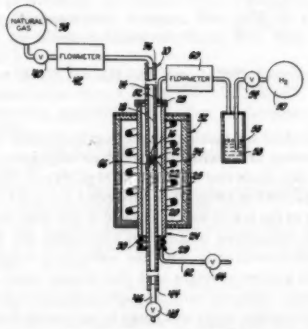
where R is a lower alkyl, a is 0 or 1, b is 0–3 , C is 0–4, d is 0–4 and a+b+c+d totals 4, with the provisos that, in different units, a, b, c, d and R may differ, but that, in at least one unit, a+d must total 1 or more and, in at least 1 unit, a+c+d must total 3 or more.

4,497,788

PROCESS FOR GROWING GRAPHITE FIBERS

John R. Bradley, Centerline, Mich.; James M. Burkstrand, Plymouth, Minn., and Gary G. Tibbetts, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1982, Ser. No. 434,734
Int. Cl.³ D01F *9/12;* C01B *31/04*
U.S. Cl. 423—447.3 **6 Claims**



1. A process for manufacturing graphite fibers of a type suitable for use as filler in plastic composites, said process comprising

flowing a predominantly methane gas over a first surface of a suitable chromium-containing iron-base alloy initially bearing a thin oxide of a type that naturally forms when exposed to air at ambient temperatures and thereafter over a second surface formed of an iron-base metal and initially bearing a predominantly iron oxide formed by heating the iron-base metal while exposed to air, and

heating said gas stream and said surfaces, while continuing said gas flow, at an elevated temperature and for a time sufficient to grow said graphite fibers on the second surface.

4,497,789

PROCESS FOR THE MANUFACTURE OF CARBON FIBERS

William R. Sawran, Russell, Ky.; Frank H. Turrill, Huntington, W. Va.; John W. Newman; Norman W. Hall, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 331,443, Dec. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 963,080, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 838,897, Oct. 3, 1977, abandoned. This application Dec. 3, 1982, Ser. No. 446,535

Int. Cl.³ D01F *9/14*

U.S. Cl. 423—447.4 **35 Claims**

1. A process for the production of pitch fibers which are precursors readily convertible to carbon fibers or graphite fibers, comprising in combination the steps of:

(a) obtaining a petroleum pitch derive from residuum from the catalytic cracking of petroleum, said pitch containing from about 20% to 40% alpha hydrogens and from 2% to about 15% of beta hydrogen atoms based on the total weight of the hydrogens in said pitch, said pitch having a softening point of at least about 250° C., a xylene insolubles content of about 15 to about 40% by weight, a quinoline insolubles content of about 0 to about 5% by weight, a sulfur content of about 0.1 to about 4% by weight, a coking value of about 65 to about 90 wt% and a mesophase content of about 0 to about 5% by weight;

(b) melting said pitch and forming fibers therefrom; and

(c) stabilizing said fibers by contact with oxidant for a time less than about 100 minutes at a temperature above about 285° C.

4,497,790

METHOD FOR FORMING CATIONIC TECHNETIUM COMPLEXES USEFUL AS RADIODIAGNOSTIC AGENTS

Manuel S. Rodriguez, Houston, Tex., assignor to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed Sep. 3, 1982, Ser. No. 414,608

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **14 Claims**

1. A method for preparing cationic lipophilic technetium complexes for radiodagnostic imaging, said method comprising (1) admising ^{99m}Tc-pertechnetate with a target-seeking ligand or aqueous salt thereof, said ligand having the following structure:

wherein:

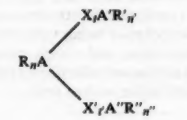
i is an integer from 1 to 6;

R, R^1, R^2, R^3, R^4, R^5, and R^6 are each independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups, and R plus R^i may be taken together to form a cyclic compound or separately to form a linear compound;

Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A^1, A^2, A^3, A^4, A^5 and A^6 are each, independently, a donor atom having a free-electron pair available for complexing with Tc-99m or Tc-99 to form a cationic complex; and

k^1, k^2, k^3, k^4, k^5 and k^6 are each independently zero or one; or

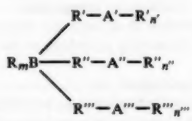


II

wherein:

R, R′ and R″ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocylcloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

X and X′ are saturated or unsaturated alkyl groups; A, A′ and A″ are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex; t and t′ are independently 0 or 1; n is 0, 1 or 2; and n′ and n″ are independently the integer 1 or 2; or



III

wherein

R, R′, R″ and R‴ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A′, A″ and A‴ are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex;

B is an atom from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99, boron, or from the elements of Group IV A of the periodic table;

m is 0 or 1; and

n, n′, n″ and n‴ are independently the integer 1 or 2; and

(2) heating the admixture to a temperature greater than 100° C. for a suitable length of time to complete the labelling reaction.

4,497,791

METHOD FOR LABELING PHAGOCYTIC CELLS

Ronald C. Gamble, Pasadena; George W. Tin, Arcadia, and Lawrence E. Williams, San Dimas, all of Calif., assignors to Vestar Research Incorporated, Pasadena and City of Hope National Medical Center, Duarte, both of, Calif.

Filed Feb. 10, 1983, Ser. No. 465,502

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **25 Claims**

1. A process for labeling cells comprising incubating cells capable of phagocytosis with labeled micellular particles having an amine on the surface thereof, for a time sufficient to permit uptake of the micellular particles by the cells.

4,497,792

SPECIMEN EMBEDDING COMPOSITION

E. Melvin Gindler, Union City, Calif., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 18, 1981, Ser. No. 332,038
Int. Cl.[3] G01N *33/48*
U.S. Cl. 424—3 5 Claims

1. A method of preparing a histological tissue specimen for sectioning on microtome for histological analysis comprising the steps of infiltrating the specimen with a melt of an embedding composition including a paraffin surface active compatibilizer selected from the group consisting of alkylphenylpolyethylene glycol, alklpolyethylene glocol, a sorbitan ester or molten paraffin-soluable fatty acid ester of an alcohol or polyalcohol, and a copolymer of ethylene and vinyl acetate, the amount of said copolymer being sufficient to increase the hardness of the composition, said compatibilizer being soluble in molten paraffin in an amount effective to reduce turbidity of the composition when in the molten state.

4,497,793

MICROENCAPSULATED NATURALLY OCCURING PYRETHRINS

Joseph Simkin, Miami, Fla., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 177,213, Aug. 11, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 470,014
Int. Cl.[3] A01N *25/28;* A61K *9/52, 9/58;* B01J *13/02*
U.S. Cl. 424—32 10 Claims

1. A process for microencapsulating naturally-occurring pyrethrins with a polyamide-polyurea shell by interfacial condensation of complementary, organic, di- or polyfunctional polycondensate-forming intermediates reacting to form a polyamide-polyurea condensate, comprising

(a) forming a suspension in an aqueous emulsion of

(i) the naturally-occurring pyrethrin to be microencapsulated;

(ii) at least one isocyanate; and

(iii) at least one acyl halide; with at least one of said isocyanate or said acyl halide being polyfunctional; and then

(b) adding to the aqueous emulsion of (a), with agitation under reaction conditions, at least one amine at such a rate as to maintain the concentration of unreacted amine below 1000 parts per million of total weight of (a) and (b), to provide substantially non-agglomerated, free-flowing microcapsules of said pyrethrin having a shell of polyamide-polyurea.

7. A persistent, naturally-occurring pyrethrin insecticide which has been microencapsulated according to the process of claim 1.

4,497,794

ERYTHROMYCIN/BENZOYL PEROXIDE COMPOSITION FOR THE TREATMENT OF ACNE

Robert W. Klein, Blue Bell, Pa., and Mary E. Foxx, Plainsboro, N.J., assignors to Dermik Laboratories, Inc., Blue Bell, Pa.

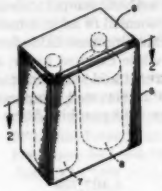
Continuation of Ser. No. 214,124, Dec. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 843,007, Oct. 17, 1977, abandoned, which is a continuation of Ser. No. 637,613, Dec. 4, 1975, abandoned. This application Jan. 3, 1983, Ser. No. 455,283
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.[3] A61K *31/78, 31/71, 31/075*
U.S. Cl. 424—81 7 Claims

1. A therapeutic aqueous gel composition comprising:

about 2.5 to about 15% by weight of micronized benzoyl peroxide having particle size of less than about 150 microns;

about 0.5 to about 5% of an erythromycin compound selected from the group consisting of erythromycin and its stearate, and glucoheptonate derivatives; and

a stabilizing agent which comprises about 0.1 to about 6% by weight of dioctyl sodium sulfosuccinate;



wherein the amount of said peroxide is about one-half to about thirty times the weight of said erythromycin compound.

4,497,795

METHOD OF REGULATING APPETITE AND EFFICIENCY OF FOOD UTILIZATION EMPLOYING INTERFERON

Joseph M. Cummins, Amarillo, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Dec. 13, 1982, Ser. No. 448,951
Int. Cl.[3] A61K *45/02*
U.S. Cl. 424—85 18 Claims

1. A method for increasing efficiency of food utilization of a warm-blooded vertebrate comprising administration to the warm-blooded vertebrate of a biologically active interferon in an amount effective to increase the efficiency in utilizing food for the warm-blooded vertebrate.

4,497,796

GENE TRANSFER IN INTACT MAMMALS

Winston A. Salser; Martin J. Cline, both of Pacific Palisades, and Howard D. Stang, Van Nuys, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 134,234, Mar. 26, 1980, Pat. No. 4,396,601. This application Dec. 8, 1982, Ser. No. 447,858
The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.
Int. Cl.[3] A61K *35/12*
U.S. Cl. 424—95 7 Claims

1. A method for enhancing the genetic capability of a mammalian host by employing mammalian cells having exogenous genetic material capable of expression which comprises:

isolating regenerative mammalian parent cells from a mammlian source compatible with said host;

combining said regenerative mammalian parent cells with DNA including at least one gene capable of providing a selective advantage over the parent cell due to a naturally occurring deficiency or external stress inducement, said combining being under conditions where said DNA is introduced into said parent cell to produce modified cells; and

introducing said modified cells into a compatible mammalian host under naturally occurring deficiency conditions or external stress induced conditions in said host providing said selective advantage, whereby said modified cells regenerate in said host at the source of said cells.

4,497,797
β-GALACTOSIDASE INHIBITOR GT-2558 AND ITS DERIVATIVES

Mitsuo Ebata; Yukio Miyake, and Yoshimi Kawamura, all of Osaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 311,326, Oct. 14, 1981, abandoned. This application Jun. 29, 1982, Ser. No. 393,506
Claims priority, application Japan, Oct. 27, 1980, 55-150927
Int. Cl.³ A61K *35/00;* **C12P** *1/06*
U.S. Cl. 424—118 **4 Claims**

1. GT-2558-A with the following properties or a pharmaceutically acceptable salt thereof:

a. m.p.
106°–108° C.

b. Molecular weight (mass spectrum)
Maximum mass m/e=302

c. Elemental analysis
Found: C,41.34; H,6.16; N,7.43; O,45.06 (%)

d. IR
ν_{max}^{KBr} 3400, 2900, 1640, 1565, 1505, 1455, 1415, 1360, 1300, 1270, 1160, 1110, 1075, 1035, 955, 930, 890, 855, 795 cm^{-1}

e. NMR
FIG. 1 and FIG. 2

f. β-Galactosidase inhibitory activity

Enzyme	pH at	Origin	IC_{50}
Taka β-galactosidase	5.0	*Aspergillus oryzae*(Sankyo)	0.0018 mcg
Taka β-galactosidase	4.5	*Aspergillus oryzae*(Sankyo)	0.0045
Galantase	4.5	*Aspergillus oryzae*(Tokyo Tanabe)	0.0045
Bovine β-galactosidase	7.2	Bovine liver (Sigma)	26.6

g. Specific β-galactosidase inhibitory activity 136,700 IU/mg (IC_{50} 0.0018 mcg).

4,497,798
APPETITE SUPPRESSANT

Teresa C. Lambert, R.D. #4, Red Lion, Pa. 17356

Filed Jun. 20, 1983, Ser. No. 506,004
Int. Cl.³ A61K *33/14, 31/19*
U.S. Cl. 424—153 **1 Claim**

1. A method for effecting appetite suppression utilizing an appetite suppressant beverage comprised of a compound of potassium combined with a flavoring agent compound together dissolved and diluted in a liquid medium, said beverage to be ingested orally by a human at times of hunger pang sensation for effecting extended duration physiological elimination thereof to thereby aid in repressing between-meal impulsive eating and appetite reduction at times of habitual meal taking.

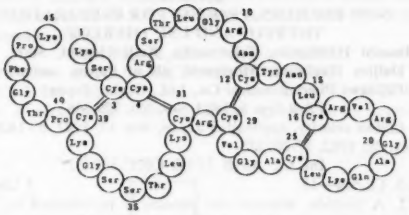
4,497,799
POLYPEPTIDE CARCINOSTATIC AGENT

Hajime Yoshizumi; Kumao Toyoshima; Akira Hakura, and Toshihiro Nakanishi, all of Osaka, Japan, assignors to Suntory Ltd., Osaka, Japan

Filed Nov. 9, 1981, Ser. No. 319,755
Int. Cl.³ A61K *37/00;* **C07C** *103/52*
U.S. Cl. 514—9 **5 Claims**

1. A method for inhibiting growth of transplanted tumors in mice comprising:

administering to said mice an antitumor effective amount of a composition comprising: (a) a polypeptide having the formula:



wherein the abbreviations, Ala, Arg, Asn, Cys, Gln, Gly, Leu, Lys, Phe, Pro, Ser, Thr, Tyr and Val represent the L-form residues of alanine, arginine, asparagine, ½ cysteine, glutamine, glysine, leucine, lysine, phenylalanine, proline, serine, threonine, tyrosine, and valine, respectively; and the designation "=" represents —S—S—bond and the arabic numbers adjacent to the amino acid cords depict the amino acid sequential arrangement as enumerated from the N-terminal.

4,497,800
STABLE LIQUID DIET COMPOSITION

Dalmon M. Larson, and Jorge Reyes, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Jul. 6, 1982, Ser. No. 395,515
Int. Cl.³ A61K *31/00, 47/00;* **A23L** *1/30;* **A23J** *1/00*
U.S. Cl. 514—2 **15 Claims**

1. A liquid ready-to-use food composition comprising a high nitrogen nutritionally complete elemental diet containing

(a) from 30 to 43 grams per liter diet of a protein equivalent component comprising about 97 parts by weight of a protein hydrolysate supplemented with about 1 part by weight each of L-methionine, L-tyrosine, and L-tryptophan;

(b) from 1.5 to 10 grams per liter diet of a suitable lipid;

(c) from 180 to 240 grams per liter diet of a carbohydrate component which is comprised of maltodextrin with a DE (dextrose equivalent) between 7 and 24 and modified corn starch with the maltodextrin comprising at least 85% of said carbohydrate component;

(d) nutritionally significant amounts of essential vitamins and minerals;

(e) from 0.1 to 1.5 gram per liter diet of an emulsion stabilizer comprising carrageenan and diacetyl tartaric acid esters of mono- and diglycerides;

(f) an edible organic or mineral acid in an amount sufficient to adjust the pH to a value between about 4.0 and 5.7; and

(g) from 800 to 850 gram per liter diet of water wherein said diet is sterilized with retention of physical and nutritional stability.

4,497,801

NEW PEPTIDES, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Masashi Hashimoto, Takarazuka; Keiji Hemmi, Suita, and Daijiro Hagiwara, Moriguchi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 6, 1983, Ser. No. 529,646

Claims priority, application Japan, Sep. 17, 1982, 57-162873; Nov. 25, 1982, 57-207335

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—15 **4 Claims**

1. A peptide, wherein the peptide is represented by the following formula: H-Lys-Leu-Lys-Ser-Glu-OH and its pharmaceutically acceptable salt.

4,497,802

N-ACYL GLYCOPEPTIDE DERIVATIVES

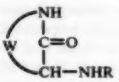
Manuel Debono, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 21, 1983, Ser. No. 544,336

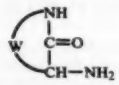
Int. Cl.³ A61K *37/00;* **C07C** *103/52;* **A61K** *35/00*

U.S. Cl. 514—8 **38 Claims**

1. A compound of the formula

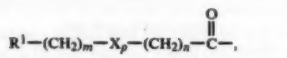


wherein W is the remaining portion of a glycopeptide antibiotic selected from A35512 factors A, B, C, E and H, A35512B pseudoaglycone, A41030 factors A, B, C, D, E, F and G, A47934, ristocetin A, ristocetin A pseudoaglycone, actaplanin factors A, B_1, B_2, B_3, C_{1a}, C_{2a}, C_3, D_1, D_2, E_1, G, K, L, M, N and O and actaplanin pseudoaglycone which have the common formula:

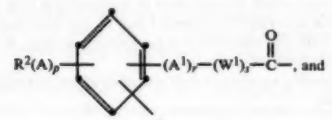


and R is an acyl group selected from:

(a)

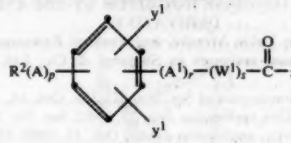


(b)



-continued

(c)



p, r, and s are 0 or 1; m and n are integers from 0 to 10; R^1 is hydrogen, halo, C_1–C_4-alkyl, C_3–C_8-cycloalkyl, phenyl, C_5–C_8-cycloalkenyl, naphthyl, indenyl, tetralinyl, decalinyl, adamantyl, a monocyclic heterocyclic ring system comprising 3 to 8 atoms in the ring or a bicyclic heterocyclic ring system comprising 6 to 11 atoms, provided that at least 1 atom of the ring system is carbon and at least 1 atom of the ring system is a heteroatom selected from O, N, and S; and wherein R^1 and the connecting alkyl groups $-(CH_2)_m-$ and $-(CH_2)_n-$ are optionally substituted by one or two halo, methyl, ethyl, methoxy, amino, N-protected-amino, methylamino, dimethylamino, acetoxy, acetamido, carbomethoxy, or hydroxyl groups, provided that, if the substituent is other than halo or alkyl, there can be no more than one substituent on any connecting $-CH_2-$ group; X is O, S, $-NH-$, $-N(CH_3)-$, $-C\equiv C-$, $-CH=CH-$, $-C(CH_3)=CH-$, $-CH=C(CH_3)-$ or $-C(CH_3)=C(CH_3)-$;

R^2 is hydrogen, C_1–C_{18}-alkyl or C_2–C_{18}-alkenyl;

A is divalent oxygen, sulfur, sulfinyl or sulfonyl;

A^1 is divalent oxygen, sulfur, sulfinyl, sulfonyl or $-NH-$;

Y is hydrogen, chloro, bromo, iodo, nitro, C_1–C_3-alkyl, hydroxy, C_1–C_3-alkoxy, mercapto, C_1–C_3-alkylthio, carbamyl or C_1–C_3-alkylcarbamyl;

Y^1 is chloro, bromo or iodo; and

W^1 is C_1–C_{10}-alkylene or C_2–C_{10}-alkenylene; provided that (1) if r=0, s must=0; (2) the sum of the carbon atoms in the R^2 and W groups must be greater than 4, but cannot exceed 21; (3) when Y is mercapto, A and A^1 cannot be sulfinyl or sulfonyl; and (4) when A and A^1 are sulfinyl or sulfonyl, they must be in equal oxidation states; and its salts.

4,497,803

INCLUSION COMPOUND OF LANKACIDIN-GROUP ANTIBIOTIC AND USE THEREOF

Setsuo Harada, Kawanishi, and Junya Okada, Hirakata, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 6, 1983, Ser. No. 482,553

Claims priority, application Japan, Apr. 12, 1982, 57-61343

Int. Cl.³ A61K *31/715, 31/71;* **C07B** *37/16*

U.S. Cl. 514—450 **6 Claims**

1. An inclusion compound of a lankacidin-group antibiotic selected from the group consisting of lankacidin A, lankacidin C, lankacidin C 8-ester, lankacidinol and a mixture of said lankacidin-group antibiotics with β- or γ-cyclodextrin.

6. A method for the treatment of swine dysentery which comprises administering to swine an amount effective for the treatment of swine dysentery of an inclusion compound as defined in claim 1.

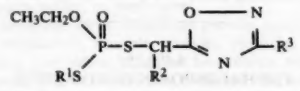
4,497,804

INSECTICIDAL, ACARICIDAL, AND NEMATICIDAL O-ETHYL S-ALKYL S-(1,2,4-OXADIAZOL-5-YL-METHYL) PHOSPHORODITHIOLATE DERIVATIVES, COMPOSITIONS, AND METHODS OF USE

Akio Kudamatsu, Kawasaki; Toyohiko Kume, and Shinichi Tsuboi, both of Hino, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,144
Claims priority, application Japan, Dec. 7, 1981, 56-195603
Int. Cl.³ C07F 9/165; C07D 271/06; A61K 33/42
U.S. Cl. 514—92 14 Claims

1. An organophosphate of the formula



wherein

R^1 is an alkyl group containing 3 to 4 carbon atoms or an alkoxyethyl group having an alkoxy moiety containing 1 to 4 carbon atoms,

R^2 is a hydrogen atom or methyl group, and

R^3 is an alkyl group containing 1 to 4 carbon atoms or a phenyl group which may be substituted by at least one member selected from the group consisting of a halogen atom, a trifluoromethyl group, a nitro group, an alkyl group containing 1 to 4 carbon atoms, and an alkoxy group containing 1 to 4 carbon atoms.

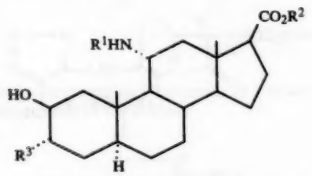
4,497,805

11α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt; Barry A. Coomber, Pinner, and Anthony J. Pateman, Uxbridge, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 383,210, May 28, 1982, abandoned. This application Mar. 16, 1983, Ser. No. 475,899
Claims priority, application United Kingdom, May 29, 1981, 8116410
The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.
Int. Cl.³ A01N 45/00; C07J 3/00
U.S. Cl. 514—172 18 Claims

1. Compounds of the formula



(I)

wherein R^1 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group;

R^2 is a C_{1-6} alkyl group or a C_{3-7} cycloalkyl group;

R^3 is a hydroxy group or a group of formula $—OR^4$ or $—OCOR^5$ where

R^4 is an alkyl or alkenyl group which may contain up to 6 carbon atoms (or such a group substituted by halogen, C_{1-6} alkoxy, carboxy, phenyl, phenyl substituted by nitro, halo, C_{1-4} alkoxy or C_{1-4} alkyl), a C_{3-7} cycloalkyl group, a phenyl group (or such a group substituted by nitro, halo, C_{1-4} alkoxy or C_{1-4} alkyl), or a carbon-attached 5–7 membered heterocyclic ring in which the hetero atom is selected from nitrogen, oxygen and sulphur, and

R^5 is a hydrogen atom or a group R^4 as defined above;

and the D-homo analogues thereof having the group $—CO_2R^2$ (wherein R^2 is as defined above) at the 17aβ-position, and salts thereof.

8. Pharmaceutical compositions comprising at least one compound of formula (I) or D-homo analogue thereof as claimed in claim 1 or a physiologically acceptable salt thereof in admixture with one or more pharmaceutical carriers or excipients.

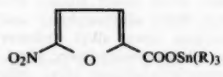
4,497,806

TRIORGANOTIN COMPOUNDS, ANTIFUNGAL AND ANTIBACTERIAL COMPOSITIONS CONTAINING SAME, AND METHOD OF USING SAME

Eugene J. Kupchik, Howard Beach, and Michael A. Pisano, East Norwich, both of N.Y., assignors to St. John's University, Jamaica, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,727
Int. Cl.³ A61K 31/555; C07D 307/42
U.S. Cl. 514—189 25 Claims

1. A triorganotin 5-nitro-2-furoate represented by Formula (I)



(I)

wherein R, which may be the same or different, is selected from the group consisting of an alkyl group, a cycloalkyl group containing from 5 to 8 carbon atoms, an aryl group containing from 6 to 12 carbon atoms and and aralkyl group containing from 7 to 12 carbon atoms.

8. An antifungal or antibacterial composition comprising, as an active ingredient, an antifungally or antibacterially effective amount of at least one triorganotin 5-nitro-2-furoate of claim 1 and an acceptable carrier or diluent.

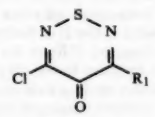
4,497,807

THIADIAZINONE PLANT DISEASE CONTROL AGENTS

Robert C. Portnoy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1978, Ser. No. 892,405
Int. Cl.³ A01N 43/88
U.S. Cl. 514—222 12 Claims

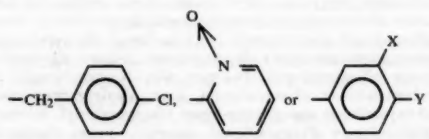
1. An agricultural composition consisting essentially of a diluent, surfactant or mixtures thereof and a fungicidally effective amount of a compound of the formula



wherein

$R_1 = SR_2$,

R_2 = alkyl of 1 to 6 carbon atoms,



X = H or Cl

Y = H, Cl or alkyl of 1 to 4 carbon atoms

provided that when X = Cl, then Y = Cl.

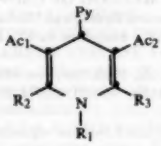
4,497,808

N-OXIDE COMPOUNDS USEFUL IN THE TREATMENT OF CARDIOVASCULAR AILMENTS

Markus Zimmermann, Riehen, and Hans Kühnis, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,393
Claims priority, application Switzerland, Dec. 30, 1981, 8359/81; Apr. 14, 1982, 2255/82
Int. Cl.³ A61K *31/44*; C07D *213/89*, *491/048*
U.S. Cl. 514—222 12 Claims

1. A compound of the formula I



(I)

in which Py represents N-oxidopyridyl that is unsubstituted or substituted by lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulphinyl, lower alkylsulphonyl and/or halogen, R_1 represents hydrogen, lower alkyl, di-lower alkylamino-lower alkyl, lower alkyleneamino-lower alkyl, morpholino-lower alkyl, thiomorpholino-lower alkyl, piperazino-lower alkyl or 4-lower alkylpiperazino-lower alkyl, one of the radicals R_2 and R_3 represents lower alkyl and the other represents hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, gem-di-lower alkoxy-lower alkyl, halo-lower alkyl, oxo-lower alkyl, lower alkoxycarbonyl-lower alkyl, carbamoyl-lower alkyl, N-lower alkylcarbamoyl-lower alkyl, N,N-di-lower alkylcarbamoyl-lower alkyl, cyano-lower alkyl, amino-lower alkyl, lower alkylamino-lower alkyl, di-lower alkylamino-lower alkyl, lower alkyleneamino-lower alkyl, morpholino-lower alkyl, thiomorpholine-lower alkyl, piperazino-lower alkyl, 4-lower alkylpiperazino-lower alkyl, lower alkoxyimino-lower alkyl, in which lower alkoxy and imino substituents are attached to the same carbon atom, hydroxyimino-lower alkyl, lower alkoxyimino-lower alkyl, lower alkoxycarbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, cyano, amino, lower alkylamino, di-lower alkylamino-lower alkylamino, lower alkyleneamino-lower alkylamino, morpholino-lower alkylamino, di-lower alkylamino, lower alkyleneamino, (2-oxo-1-imidazolidinyl)-lower alkyleneamino, morpholino, thiomorpholino, piperazino, 4-lower alkylpiperazino, 4-lower alkanoylpiperazino, 4-benzoylpiperazino, 4-furoylpiperazino or 4-thienoylpiperazino, it being possible for an amino group R_2 or R_3 also to be bonded to a lower alkyl radical R_1 and to form together with that radical a 1-aza-lower alkylene radical the nitrogen atom of which is bonded to the 2- or 6-ring carbon atom of the 1,4-dihydropyridine ring, or, if R_2 or R_3 represents hydroxy-lower alkyl, for this hydroxy-lower alkyl, together with the adjacent acyl radical Ac_1 or Ac_2, to form a 2-oxa-1-oxo-lower alkylene radical, the carbonyl group of which is bonded to the 3- or 5-ring carbon atom of the 1,4-dihydropyridine ring, and each of the radicals Ac_1 and Ac_2, independently of the other, represents lower alkanoyl, benzoyl that is unsubstituted or substituted by lower alkyl, lower alkoxy and/or halogen, lower alkylsulphonyl, phenylsulphonyl that is unsubstituted or substituted by lower alkyl, lower alkoxy and/or halogen, lower alkoxycarbonyl, hydroxy-lower alkoxycarbonyl, lower alkoxy-lower alkoxycarbonyl, amino-lower alkoxycarbonyl, lower alkylamino-lower alkoxycarbonyl, di-lower alkylamino-lower alkoxycarbonyl, N-lower alkyl-N-phenyl-lower alkylamino-lower alkoxycarbonyl, lower alkyleneamino-lower alkoxycarbonyl, morpholino-lower alkoxycarbonyl, thiomorpholino-lower alkoxycarbonyl, piperazino-lower alkoxycarbonyl, 4-lower alkylpiperazino-lower alkoxycarbonyl, phenyl-lower alkoxycarbonyl that is unsubstituted or substituted by lower alkyl, lower alkoxy and/or halogen carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, N,N-lower alkylenecarbamoyl, morpholinocarbonyl, thiomorpholinocarbonyl, piperazinocarbonyl or 4-lower alkylpiperazinocarbonyl, or salts of such compounds having salt-forming groups.

11. A method for the treatment of cardiovascular conditions such as high blood pressure, vascular constrictions, Angina pectoris and its sequelae and cardiac insufficiency which comprises administering of a therapeutically effective amount of a compound of the formula I as claimed in claim 1, with the exception of those in which R_2 or R_3 represents hydroxy-lower alkyl, and this hydroxy-lower alkyl together with the adjacent acyl radical Ac_1 or Ac_2 forms a 2-oxa-1-oxo-lower alkylene radical, the carbonyl group of which is bonded to the 3- or 5-ring carbon atom of the 1,4-dihydropyridine ring, or a pharmaceutically acceptable acid addition salt of such compound having salt-forming groups, to a host in need thereof.

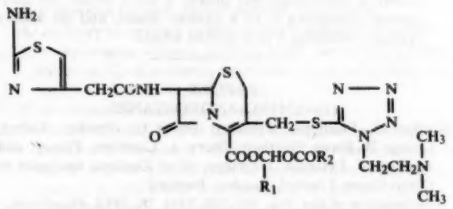
4,497,809

CEPHALOSPORIN DERIVATIVES

Yoshinobu Yoshimura; Naoru Hamaguchi, both of Osaka, and Takatsuka Yashiki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

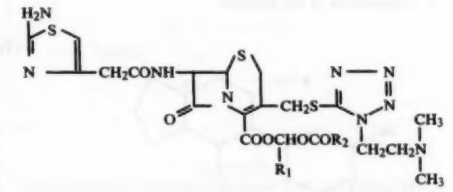
Filed Apr. 20, 1983, Ser. No. 486,820
Claims priority, application Japan, Apr. 30, 1982, 57-73729
Int. Cl.³ A61K *31/545*; C07D *501/56*
U.S. Cl. 514—206 12 Claims

1. A compound of the formula:



wherein R_1 is methyl or ethyl; and R_2 is a straight-chain or branched alkyl group of 5 to 7 carbon atoms or its pharmaceutically acceptable salt.

12. A pharmaceutical composition comprising a compound of the formula:



wherein R_1 is methyl or ethyl; and R_2 is a straight-chain or branched alkyl group of 5 to 7 carbon atoms, or its pharmaceutically acceptable salt as an effective ingredient.

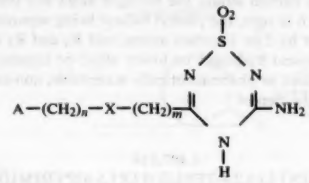
4,497,810

THIATRIAZINE DIOXIDES AS GASTRIC ANTI-SECRETORY AGENTS

Jacob M. Hoffman, Jr., North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 14, 1983, Ser. No. 541,834
Int. Cl.³ C07D *285/00*, *417/12*, *417/06*; A61K *31/54*
U.S. Cl. 514—222 9 Claims

1. A compound having the formula:



wherein:
n is 0 or 1;
m is 2 to 4;
X is oxygen, sulfur, or methylene;
Ⓐ is phenylene, furan, thiophene, pyrrole, oxazole, oxadiazole, thiadiazole, thiazole, triazole, pyrazole, imidazole, pyridine, pyrimidine, pyrazine, benzofuran, benzoxazole, or benzimidazole, which may be substituted with diloweralkylaminoloweralkyl, or guanidino wherein the alkyl groups contain 1 to 8 carbon atoms;
and, the pharmaceutically acceptable salts thereof.

5. A composition useful for suppressing gastric acid secretions in an animal with excess gastric acid secretions which comprises an inert carrier and an antisecretorily effective amount of a compound of claim 1.

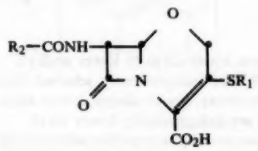
4,497,811

1-OXADETHIACEPHALOSPORIN COMPOUND AND ANTIBACTERIAL AGENT CONTAINING THE SAME

Seiji Shibahara, No. 3-18-30, Tsukushino, Machida-shi, Tokyo; Tsuneo Okonogi, No. 2-5-11-403, Susukino, Midori-ku, Yokohama-shi, Kanagawa; Yasushi Murai, No. 2-37-19, Futaba, Yokosuka-shi, Kanagawa; Shunzo Futkatsu, No. 1-13, Ichigayata-machi, Shinjika-ku, Tokyo; Taro Niida, No. 127, Nakakibougaoka, Asahi-ku, Yokohama-shi, Kanagawa, and Tadashi Wakazawa, No. 2602-53, Kamariya-cho, Kanazawa-ku, Yokohama-shi, Kanagawa, all of Japan

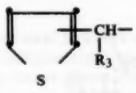
Filed Jul. 1, 1983, Ser. No. 510,132
Int. Cl.³ C07D *498/04;* A61K *31/535*
U.S. Cl. 424—248.51 **2 Claims**

1. A compound of the formula:

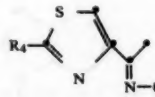


(I)

wherein R_1 represents an alkyl group of 1 to 4 carbon atoms and R_2 is a group of the formula:



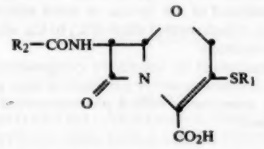
in which R_3 is a hydrogen atom or carboxyl group, or a group of the formula:



in which R_4 is a hydrogen atom or amino group, and R_5 represents an alkyl group of 1 to 4 carbon atoms or a group of the formula:

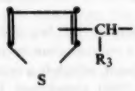
where R_6 and R_7 may be the same or different and each is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, or a non-toxic salt or non-toxic ester of said compound.

2. An antibacterial agent which comprises as the active ingredient an antibacterially effective amount of one or more of a compound of the formula:

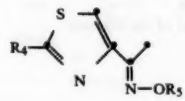


(I)

wherein R_1 represents an alkyl group of 1 to 4 carbon atoms and R_2 is a group of the formula:



in which R_3 is a hydrogen atom or carboxyl group, or a group of the formula:



in which R_4 is a hydrogen atom or amino group, and R_5 represents an alkyl group of 1 to 4 carbon atoms or a group of the formula:

where R_6 and R_7 may be the same or different and each is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, or a non-toxic salt or non-toxic ester thereof and a solid or liquid excipient.

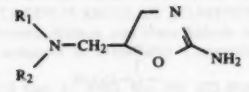
4,497,812

2-AMINO-5-AMINOMETHYL-2-OXAZOLINES, COMPOSITIONS AND USE

Marie-Hélène Creuzet, Bordeaux; Claude Feniou, Pessac; Christian Jarry, Artigues près Bordeaux; Gisèle Prat, Talence, and Henri Pontagnier, Pessac, all of France, assignors to Societe Cortial, S.A., Paris, France

Filed Oct. 5, 1983, Ser. No. 539,286
Claims priority, application France, Oct. 5, 1982, 82 16782; May 19, 1983, 83 08477
Int. Cl.³ C07D *263/28, 295/12;* A61K *31/42, 31/535*
U.S. Cl. 514—211 **8 Claims**

1. A compound having the general formula:



wherein R_1 and R_2 independently represent an alkyl radical of C_1 to C_4, or a carbocyclic alkyl radical having less than 4 rings, or a carbocyclic radical having less than 4 rings;

R_1 and R_2 can form, with the nitrogen atom to which they are attached, a 4 to 7 member heterocycle containing 1 or 2 nitrogen atoms, and either 1 or 0 oxygen atoms, said heterocycle can be substituted by R with R being an alkyl radical of C_1 to C_4, a carbocyclic alkyl radical having less than 4 rings, allyl, a 5 or 6 member heterocycle containing 1 nitrogen, or a carbocyclic radical having less than 4 rings substituted or not by one or more substituents such as halogen, trihalomethyl alkyl of C_1 to C_4, alkyloxy of C_1 to C_4, or hydroxy.

4. A pharmaceutical or veterinary composition characterized in that it contains as active principle at least a product as in claim **1** in association with a pharmaceutical vehicle or suitable excipient.

4,497,813

DERIVATIVES OF 3-AMINOPROPANE-1,2-DIOL

Franz Ostermayer, and Markus Zimmermann, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

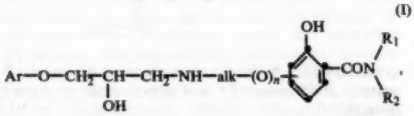
Continuation-in-part of Ser. No. 255,414, Apr. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 181,581, Aug. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 122,640, Feb. 19, 1980, abandoned. This application May 14, 1982, Ser. No. 378,165

Claims priority, application Switzerland, Mar. 1, 1979, 2037/79

Int. Cl.[3] **C07C** *103/26;* **A61K** *31/605*

U.S. Cl. 514—166 **36 Claims**

1. A compound of the formula



(I)

in which Ar is unsubstituted or substituted phenyl, naphthyl, 1,2,3,4-tetrahydro-5-naphthyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, thienyl, thiazolyl, thiadiazolyl, indolyl, quinolinyl, isoquinolinyl, [3,4-dihydro-2-(1H)-quinolinolyl,][2-oxobenzimidazol-4-yl,]naphthyridinyl or benzofuranyl, and where said group Ar is substituted there are one or at most three substituents selected from lower alkyl, lower alkenyl or lower alkoxy, lower alkenyloxy, lower alkynyl, lower alkynyloxy, cyano and/or nitro, and/or, as substituents bonded directly or to the above-mentioned lower alkyl, lower alkenyl or lower alkoxy, one or more of lower alkanoyl, cycloalkyl, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl or (hydroxy-lower alkyl)-carbamoyl, lower alkylsulphinyl, lower alkylsulphonyl, sulphamoyl or lower alkylsulphamoyl; or halogen bonded directly to said group Ar, or halogen bonded to said lower alkyl or, in a position higher than the 1-position, halogen bonded to said lower alkoxy; or hydroxy, bonded directly or bonded to said lower alkyl; as substituents not bonded directly to said group Ar, lower alkoxy, cycloalkyl-lower alkoxy, phenyl-lower alkoxy, lower alkanoyloxy, lower alkylthio, amino, lower alkylamino, di-lower alkylamino, alkyleneamino or oxa-alkyleneamino, pyrrol-1-yl, lower alkanoylamino, lower alkoxycarbonylamino, ureido, ureido substituted by one or two lower alkyl, by hydroxy-lower alkyl or by cycloalkyl or lower alkylsulphonylamino, n is the number 0 or 1; alk is alkylene having from 2 to 4 carbon atoms, the nitrogen atom and the oxygen atom or, if n is zero, the phenyl radical being separated from one another by 2 or 3 carbon atoms, and R_1 and R_2 independently represent hydrogen or lower alkyl, or together represent piperidino, or pharmaceutically acceptable, non-toxic acid addition salts thereof.

4,497,814

2-(PYRIDINYL)-1,2,4-TRIAZOLO[1,5-a]PYRIMIDINES AND DERIVATIVES USEFUL IN INCREASING CARDIAC CONTRACTILITY

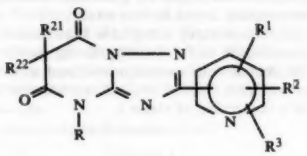
Joseph T. Witkowski, Morris Township, Morris County, N.J., assignor to Schering Corporation, Kenilworth, N.J.

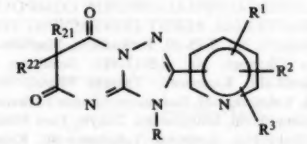
Filed Aug. 16, 1982, Ser. No. 408,359

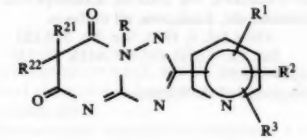
Int. Cl.[3] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 514—258 **26 Claims**

1. A compound selected from the group consisting of







wherein

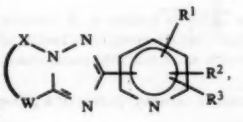
R is hydrogen, lower alkyl or lower aralkyl;

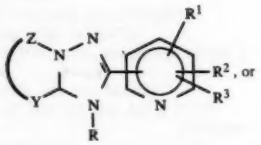
R^1,R^2 and R^3 are independently selected from hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl and amino;

R^{21} and R^{22} are independently lower alkyl;

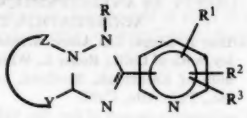
and the pharmaceutically acceptable salts thereof.

23. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and an amount effective in increasing cardiac contractility of a compound of the formula selected from the group consisting of



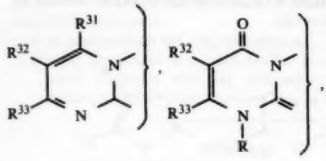


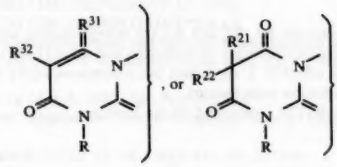
-continued



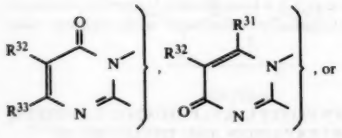
wherein

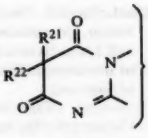
W and X together with the carbon and nitrogen of the triazolo ring are joined to form a heterocyclic ring selected from the group consisting of





Y and Z together with the carbon and nitrogen of the triazolo ring are joined to form a heterocyclic ring selected from the group consisting of





R is hydrogen, lower alkyl or lower aralkyl;

R^1, R^2 and R^3 are independently selected from hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl and amino;

R^{31}, R^{32} and R^{33} are independently selected from hydrogen, lower alkyl, hydroxy, cyano, $-NR^4R^5$ wherein R^4 is hydrogen, lower alkyl, or

wherein R^6 is lower alkyl, and R^5 is hydrogen, lower alkyl, or together with R^4 is joined to form a ring containing 4 to 6 carbon atoms,

wherein R^7 is hydroxy, lower alkoxy, or $-NR^8R^9$ wherein R^8 and R^9 are independently selected from hydrogen or lower alkyl;

wherein M is sulfur or NH; R^{21} and R^{22} are independently selected from hydrogen or lower alky;

and the pharmaceutically acceptable salts thereof.

4,497,815

1-(N-SUBSTITUTED CARBAMOYL)-5-FLUOROURACIL DERIVATIVES AND THE CARCINOSTATIC AGENTS CONTAINING SAME AS ACTIVE INGREDIENTS

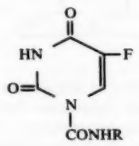
Shoichiro Ozaki, 60-397, Takahama-cho 1-chome, Matsuyama, Ehime-ken, Japan; Tomonori Hoshiko, Matsuyama, and Tomio Ogasawara, Iyo, both of Japan, assignors to Shoichiro Ozaki, Matsuyama, Japan

Filed Jan. 5, 1983, Ser. No. 455,863

Int. Cl.³ A61K *31/505;* **C07D** *239/55*

U.S. Cl. 517—274 **12 Claims**

1. A 1-(N-substituted carbamoyl)-5-fluorouracil derivative having the formula:



(1)

wherein R is a 4-alkoxycyclohexyl group-containing radical selected from the group consisting of 2,3,4-trimethoxycyclohexylethyl, 2,3,4-trimethoxycyclohexyl, 2,4-dimethoxycyclohexylmethyl, 3,4-dimethoxycyclohexylethyl, 2,4-dimethoxycyclohexyl, 2,4,5-trimethoxycyclohexyl, 3,4-dimethoxycyclohexylmethyl, 3,4,5-trimethoxycyclohexyl, 4-ethoxycyclohexyl and 4-ethoxycyclohexylmethyl.

2. A carcinostatic agent comprising therapeutically effective amount of a compound as claimed in claim **1** together with at least one pharmaceutically-acceptable, substantially nontoxic common auxiliary and/or additive substance.

4,497,816

7-(4-PYRIDYL)-1,8-NAPHTHYRIDINE DERIVATIVES AND THEIR ANTIBACTERIAL COMPOSITIONS

Jun-ichi Matsumoto, Ikoma; Yoshiro Nishimura, Suita, and Shinichi Nakamura, Takatsuki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratorie Roger Bellon, Neuilly sur Seine, France

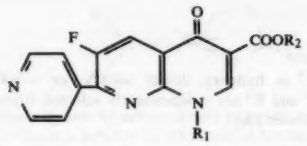
Filed Aug. 1, 1983, Ser. No. 519,513

Claims priority, application Japan, Jul. 30, 1982, 57-134205

Int. Cl.³ A61K *31/435;* **C07D** *471/04*

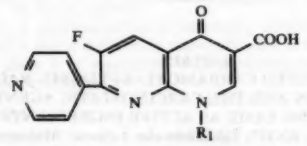
U.S. Cl. 514—300 **5 Claims**

1. A 7-(4-pyridyl)-1,8-naphthyridine compound of the formula



wherein R_1 is a hydrogen atom, an ethyl or vinyl group, and R_2 is a hydrogen atom or a lower alkyl group having 1 to 6 carbon atoms,
or a salt thereof.

5. A pharmaceutical composition comprising an antibacterially effective amount of a 7-(4-pyridyl)-1,8-naphthyridine compound of the formula



wherein R_1 is an ethyl or vinyl group,
or a non-toxic pharmaceutically acceptable salt thereof, and a non-toxic pharmaceutically acceptable carrier therefor.

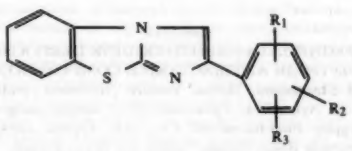
4,497,817

2-PHENYLIMIDAZO [2,1-b]BENZOTHIAZOLE DERIVATIVES

Kiyoshi Murase, Saitama; Toshiyasu Mase, Chiba, and Kenichi Tomioka, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 176,907, Aug. 11, 1980, abandoned. This application Apr. 26, 1983, Ser. No. 487,357
Claims priority, application Japan, Aug. 21, 1979, 54-106438; Nov. 9, 1979, 54-145077; Nov. 16, 1979, 54-148441
Int. Cl.³ C07D *277/60*; A61K *31/425*
U.S. Cl. 548—150 **11 Claims**

1. A compound of the formula



wherein R_1 is hydroxy, nitro or methoxycarbonyl, R_2 is hydroxy, chloro or hydrogen and R_3 is chloro or hydrogen wherein when R_1 is nitro or methoxycarbonyl R_2 and R_3 are hydrogen and wherein when R_1 and R_2 are hydroxy R_3 is hydrogen.

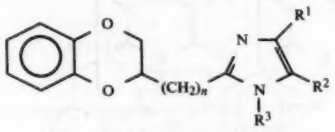
4,497,818

2-(1,4-BENZODIOXAN-2-YLALKYL)IMIDAZOLES USEFUL AS ANTIHYPERTENSIVES AND PLATELET AGGREGATION INHIBITORS

Arthur F. Kluge, Los Altos; Arthur M. Strosberg, Portola Valley, both of Calif.; Roger L. Whiting, and George A. Christie, both of Edinburgh, Scotland, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

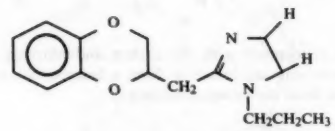
Continuation-in-part of Ser. No. 185,832, Sep. 10, 1980, Pat. No. 4,302,469. This application Aug. 5, 1981, Ser. No. 290,126
The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.
Int. Cl.³ C07D *231/10*
U.S. Cl. 514—397 **9 Claims**

1. A method for treating essential hypertension in human beings which method comprises administering to a subject in need of such treatment a therapeutically effective amount of the compound of formula



wherein R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen and alkyl (1–6C), and wherein n is either 0, 1, or 2, and the pharmaceutically acceptable acid addition salts thereof.

9. The compound of the formula



namely 1-n-propyl-2-(1,4-benzodioxan-2-ylmethyl)imidazole and the pharmaceutically acceptable acid addition salts thereof.

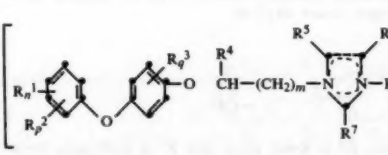
4,497,819

DIBENZOFURANYLOXYALKYLIMIDAZOLIUM SALTS, THEIR PREPARATION AND THEIR USE AS MICROBICIDES

Costin Rentzea, Heidelberg; Norbert Meyer, Ladenburg; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

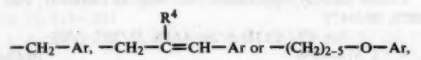
Filed May 5, 1983, Ser. No. 491,651
Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217963
Int. Cl.³ A61K *31/415*; C07D *405/12*
U.S. Cl. 514—397 **4 Claims**

1. A dibenzofuranyloxyalkylimidazolium salt of the formula



where R^1, R^2 and R^3 are identical or different and are each

halogen, unsubstituted or halogen-substituted alkyl or alkoxy, each of 1 to 4 carbon atoms, cyano or nitro, R^4, R^5, R^6 and R^7 independently of one another are each hydrogen or alkyl of 1 to 4 carbon atoms, R^8 is alkyl, alkenyl or alkynyl, each of not more than 6 carbon atoms,



Ar is naphth-1-yl, naphth-2-yl, biphenylyl or phenyl, and the phenyl radical can be substituted by fluorine, chlorine, bromine, nitro, trifluoromethyl, cyano or alkyl, alkenyl or alkoxy of not more than 5 carbon atoms, m is 1, 2, 3 or 4, n, p and q are each 0, 1, 2 or 3, and X is an anion of a monobasic, non-phytotoxic acid or one equivalent of an anion of a polybasic, non-phytotoxic acid.

3. A composition for crop protection having fungicidal and bactericidal properties comprising inert additives and, as active ingredient, a dibenzofuranyloxyalkylimidazolium salt as claimed in claim 1.

4,497,820
SUBSTITUTED IMINODERIVATIVES OF DIHYDROBENZOPYRAN AND DIHYDROBENZOTHIOPYRAN

Lucio Merlini; Alessandro Rossi, and Metilde Buonamici, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

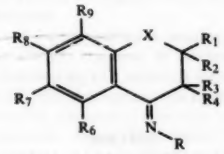
Filed May 4, 1983, Ser. No. 491,386

Claims priority, application United Kingdom, May 6, 1982, 8213109

Int. Cl.³ A61K *31/35, 31/38;* **C07D** *311/68, 335/06*

U.S. Cl. 514—432 **15 Claims**

1. A compound having the following general formula (I)



(I)

wherein

X is —O— or —S—;

each of R_1, R_2 and R_3, being the same or different, is hydrogen, C_1–C_{10} alkyl or phenyl; or R_1 and R_2, taken together, form a C_5–C_7 cycloalkyl ring;

R_4 is hydrogen or C_1–C_6 alkyl;

R_6 is —OR_{10} or —SR_{10}, wherein R_{10} is hydrogen or C_1–C_6 alkyl;

R_5 is C_1–C_{10} alkyl, C_2–C_{10} alkenyl or C_3–C_7 cycloalkyl, wherein the alkyl, alkenyl and cycloalkyl groups are unsubstituted or substituted by one or more substituents chosen from the group consisting of halogen, oxo, —OR_{10}, —SR_{10}, —COR_{10}, —$OCOR_{10}$, —$COOR_{10}$ and

wherein each of the groups R_{10}, being the same or different, is as defined above;

one of R_7, R_8 and R_9 is C_1–C_{12} alkyl and the others, which may be the same or different, are hydrogen or C_1–C_{12} alkyl, and the pharmaceutically acceptable salts thereof.

11. A pharmaceutical composition containing a suitable carrier and/or diluent and, as an active principle, a compound of formula (I), according to claim 1, or a pharmaceutically acceptable salt thereof.

4,497,821
MEDICAMENTS HAVING ANTIHYPOXIC AND ISCHAEMIA-PROTECTIVE ACTIVITY

Egbert Wehinger; Horst Meyer, both of Wuppertal, and Ulrich Benz, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

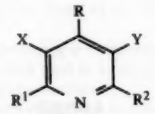
Filed Feb. 28, 1983, Ser. No. 470,883

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209276

Int. Cl.³ A61K *31/34, 31/38, 31/42, 31/44, 31/47, 31/415, 31/425, 31/475, 31/495, 31/505*

U.S. Cl. 514—302 **12 Claims**

1. A method of controlling damage to the central nervous system of a patient requiring such treatment which comprises administering to such patient a central nervous system-controlling effective amount of a pyridine derivative of the formula



in which

R represents an aryl radical or a thienyl, furyl, pyrryl, imidazolyl, oxazolyl, isoxazolyl, thiazolyl, benzimidazolyl, benzoxazolyl, benzisoxazolyl, and benzoxadiazolyl radical, the aryl radical and the heterocycles optionally containing 1 to 2 identical or different substituents from the group comprising phenyl, alkyl, alkoxy, alkylene, dioxyalkylene, halogen, trifluoromethyl, polyfluoroalkoxy, nitro, cyano, azido or SO_m-alkyl (m=0 to 2),

R^1 and R^2 are identical or different and represent hydrogen, a straight-chain or branched alkyl radical, an aryl radical or an aralkyl radical or represent an acyloxyalkyl or a hydroxyalkyl group, or represent an alkylene chain, which, together with X or Y, forms a 5 to 7-membered ring which contains a carbonyl group and optionally an oxygen or nitrogen atom, and

X and Y are identical or different and represent the nitrile group or represent the radical —CO—R^3, R^3 representing a straight-chain, branched or cyclic alkyl radical, an aryl radical or an aralkyl radical, or X and Y represent the group —$COOR^4$, R^4 representing a hydrogen atom, a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical, which is optionally interrupted by an oxygen atom in the chain and/or is optionally substituted by halogen, cyano, hydroxyl, acyloxy, pyridyl, aryl or aryloxy, it being possible for the aryl groups in turn to be substituted by alkyl, fluorinated alkyl, alkoxy, halogen or nitro, or by an amino group which is optionally substituted by two identical or different substituents from the group comprising alkyl, aryl or aralkyl, or

X and Y represent the group —SO_2R^5, R^5 representing a lower alkyl radical or a phenyl radical optionally substituted by halogen, trifluoromethyl, alkoxy or alkyl.

or a salt thereof.

4,497,822

INSECTICIDAL N-BENZOYL-N'-PHENYL-N'-(R-THIO)UREAS

Martin Anderson, Whitstable, United Kingdom, assignor to Shell Oil Company, Houston, Tex.

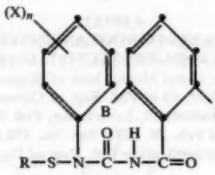
Filed Apr. 14, 1983, Ser. No. 484,773

Claims priority, application United Kingdom, Apr. 23, 1982, 8211783

Int. Cl.³ C07C 83/10; A01N 37/18

U.S. Cl. 514—592 9 Claims

1. A compound of the formula:



wherein Hal is a halogen atom; B is a hydrogen or halogen atom; X is halogen, cyano, lower haloalkyl, lower haloalkoxy, or phenoxy substituted by one or more of nitro, cyano, halogen, lower haloalkyl, and lower haloalkoxy; n is one, two or three; and R is lower haloalkyl, or phenyl optionally substituted by one or more of nitro, lower alkyl, and halogen.

4. A method for controlling insects at a locus which comprises applying to said locus an effective amount of a compound of claim 1.

4,497,823

THERAPEUTIC METHOD TO REDUCE PAIN AND INFLAMMATION

William T. Moore, Box 76, Old Chimney Farm, Carversville, Pa. 18913, and John W. Albright, 7 Pendleton Dr., Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 439,620, Nov. 5, 1982, abandoned. This application Mar. 29, 1983, Ser. No. 480,018

Int. Cl.³ A61K 31/265

U.S. Cl. 514—512 5 Claims

1. A method of treating pain, infection, trauma, or inflammation in the dermal or sub-dermal tissue of a subject by topical administration to the skin area proximate said tissue of a therapeutically effective amount of a medicament consisting essentially of propylene carbonate.

4,497,824

METHOD OF CHEMICALLY DEBRIDING ULCERATED NECROTIC TISSUE

Thomas L. Schulte, 218 Family Farm Dr., Woodside, Calif. 94062

Continuation-in-part of Ser. No. 456,896, Jan. 10, 1983, , which is a continuation-in-part of Ser. No. 276,566, Jun. 23, 1981, Pat. No. 4,369,190. This application Jan. 17, 1984, Ser. No. 571,417

Int. Cl.³ A61K 31/10, 31/235

U.S. Cl. 514—166 9 Claims

1. A method for promoting the healing of an abnormal, ulcerated necrotic tissue on skin or mucous membrane of a patient which comprises applying topically to the affected area of the patient an amount of biphenamine, as an aqueous mixture comprising a pharmaceutically acceptable carrier, effective to promote debridement of necrotic tissue from the affected area, thereby promoting the healing of the affected area.

4,497,825

PROCESS FOR THE PREPARATION OF BETAINES

Volkbert Bade, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 158,462, Jun. 11, 1980, abandoned. This application Nov. 16, 1982, Ser. No. 442,847

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926479

Int. Cl.³ C11D 3/26; A61K 31/205, 7/08

U.S. Cl. 514—556 10 Claims

1. A process for the preparation of betaines having the formula

$$R^1CONH(CH_2)_xN^{\oplus}R^2R^3(CH_2)_yCOO^{\ominus}$$

in which

R^1 is the alkyl residue of a fatty acid with 6 to 18 carbon atoms,

R^2 and R^3 are the same or different and represent alkyl residues with 1 to 4 carbon atoms,

x=2 or 3, and

y=1, 2, or 3,

comprising quaternizing fatty acid amides having the formula

$$R^1CONH(CH_2)_xNR^2R^3$$

with ω-halogenalkylcarboxylic acids having the formula

$$X(CH_2)_yCOOH$$

in which X is a halogen residue or salts of said acids in aqueous solution wherein the entire course of the quaternizing reaction is carried out in an alkaline solution having a pH of from 7.5 to 10.5 measured at 98° C.

4,497,826

ANTIPARKINSONIAN AGENT

Hirotaro Narabayashi, 5-12-8, Nakameguro, Meguro-ku, Tokyo-to; Tomoyoshi Kondo, 2-12-3, Sugamo, Toshima-ku, Tokyo-to; Akira Hayashi, 9-5, Tsukumodai 3-chome, Suita-shi, Osaka-fu, and Tomokazu Suzuki, 9-30-307, Okamoto 4-chome, Higashinada-ku, Kobe-shi, Hyogo-ken, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka; Hirotaro Narabayashi; Tomoyoshi Kondo, both of Tokyo; Akira Hayashi, Osaka and Tomokazu Suzuki, Hyogo, all of, Japan

Filed Sep. 8, 1982, Ser. No. 415,907

Claims priority, application Japan, Sep. 22, 1981, 56-150082

Int. Cl.³ A61K 31/15, 31/195

U.S. Cl. 514—567 10 Claims

5. A method for treating parkinson's disease in a patient for whom treatment with L-DOPA and a decarboxylase inhibitor is substantially ineffective, which comprises administering a pharmaceutically effective amount of DL- or L-threo-3,4-dihydrophenylserine or a pharmaceutically acceptable acid addition salt thereof and a decarboxylase inhibitor selected from the group consisting of carbidopa, benserazide, the hydrochloride of benserazide and methyldopa to a patient suffering from parkinson's disease, said decarboxylase inhibitor being used in an amount of 0.025 to 0.5 mole to 1 mole of the DL- or L-threo-3,4-dihydroxyphenylserine.

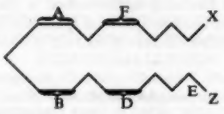
6. A method according to claim 5, wherein DL- or L-threo-3,4-dihydroxyphenylserine or said salt thereof is orally administered in an amount of from 0.1 to 4 g per day.

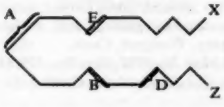
4,497,827
ARACHIDONIC ACID ANALOGUES AS ANTI-INFLAMMATORY AND ANTI-ALLERGIC AGENTS

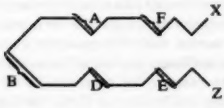
Peter H. Nelson, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 30, 1982, Ser. No. 412,477
Int. Cl.³ C07C *103/133;* A61K *31/16*
U.S. Cl. 514—381 60 Claims

1. A compound chosen from those represented by the formulas


(1)

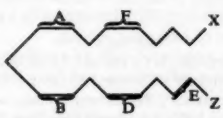

(2)

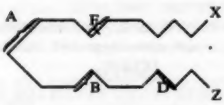

(3)

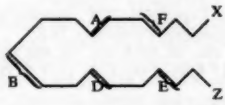
and their pharmaceutically acceptable, non-toxic salts wherein
A is C═C or C≡C;
B is C═C or C≡C;
D is C—C, C═C, or C≡C;
E is C—C, C═C, or C≡C;
F is C—C, C═C, or C≡C;
Z is CH_3, CH_2CH_3, $—CH_2CH_2CH_3$; $CH_2CH_2CH_2CH_3$; and
X is C(O)NHOH.

34. A method for preventing or treating inflammation and/or pain and allergic reactions in mammals which method comprises administering to a subject in need of such treatment a therapeutically effective amount of a compound of claim 1 or a pharmaceutically acceptable, non-toxic salt thereof.

35. A compound chosen from those represented by the formulas


(1)


(2)


(3)

and their pharmaceutically acceptable, non-toxic salts wherein
A is C═C or C≡C;
B is C═C or C≡C;
D is C—C, C═C, or C≡C;
E is C—C, C═C, or C≡C;
F is C—C, C═C, or C≡C;
Z is CH_3, CH_2CH_3, $—CH_2CH_2CH_3$; $CH_2CH_2CH_2CH_3$; X is $CONH_2$ and at least one of A, B, D, or F is C≡C.

4,497,828
3-NITRO-4-METHYLBENZENE SULFON-2-CHLORO-4-NITROANILIDE AND FUNGICIDAL COMPOSITION FOR THE CONTROL OF PLANT DISEASES CONTAINING SAME

Takeo Yoshimoto, Yokohama; Keiichi Igarashi, Musashino; Hideo Yamazaki, Yokohama; Yoshio Takasawa, Ayase, and Hirohisa Yanagita, Chigasaki, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,628
Claims priority, application Japan, Jan. 5, 1982, 57-45
Int. Cl.³ C07C *143/79;* A01N *41/06*
U.S. Cl. 514—603 5 Claims

1. 3-nitro-4-methylbenzene sulfon-2-chloro-4-nitroanilide.

5. A method of controlling clubroot disease of Brassica spp. which comprises, prior to the planting of a crop of the genus Brassica, applying 3-nitro-4-methyl-benzene sulfon-2-chloro-4-nitroanilide to the field in an amount of 5 to 20 kilograms per hectare.

4,497,829
PROCESS FOR PREPARING PERFLUOROCHEMICAL EMULSION ARTIFICIAL BLOOD

Henry A. Sloviter, Philadelphia, Pa., assignor to The University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 402,451, Jul. 27, 1982, Pat. No. 4,423,077.
This application Aug. 19, 1983, Ser. No. 524,793
Int. Cl.³ A61K *31/13, 31/02*
U.S. Cl. 514—672 12 Claims

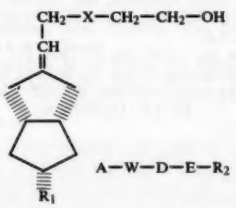
1. A process for preparing a stable emulsion comprising:
(a) dispersing purified lipid in a physiologically acceptable aqueous medium by sonication;
(b) adding perfluoro compound to the dispersion formed in (a);
(c) sonicating the mixture of lipid and perfluoro compound formed in (b) to form an emulsion of lipid-coated particles of perfluoro compound; and
(d) centrifuging the emulsion formed in (c) to separate oversize particles.

4,497,830
CARBACYCLINS, THEIR PREPARATION AND PHARMACOLOGICAL USE

Werner Skuballa; Bernd Raduechel; Helmut Vorbrueggen; Jorge Casals-Stenzel; Ekkehard Schillinger; Gerda Mannesmann, and Bob Nieuweboer, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,609
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3121155
Int. Cl.³ C07C *33/12;* A01K *31/557*
U.S. Cl. 514—277 23 Claims

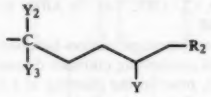
1. A compound of the formula



wherein

X is oxygen or $—CH_2—$;
A is $CH_2—CH_2$, trans—CH=CH— or C≡C—;
W is -CH(OR)-or

wherein in the latter group OR may be in the α- or β-position;
-D-E-R_2 has the structure



wherein Y_2 and Y_3 are independently each H or C_{1-4}-alkyl and

represents

wherein Y_4 is C_{1-5}-alkyl; and Y_5 is H or C_{1-5}-alkyl and is different from R_2;
R_1 is OR;
R_2 is H; C_{1-10}-alkyl; C_{1-10}-alkenyl; C_{1-10}-alkyl or C_{1-10}-alkenyl, each substituted by C_{4-10}-aryl or substituted C_{4-10}-aryl as defined below; C_{4-10}-cycloaklyl; C_{4-10}-cycloalkyl substituted by C_{1-4}-alkyl; C_{4-10}-aryl; C_{4-10}-aryl substituted by 1 to 3 halogen atoms, a phenyl group, 1 to 3 alkyl groups each of 1 to 4 carbon atoms, or a chloromethyl, fluoromethyl, trifluoromethyl, carboxyl, C_1–C_4-alkoxy or hydroxy group; or an aromatic heterocycle or 5 or 6 ring atoms, one of which is O, N or S, the remainder being carbon atoms; and
R is H or tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid.

4,497,831

POLYOXYETHYLENE DERIVATIVES AS ANTIPRURITIC ECTOPARASITICIDE

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Division of Ser. No. 4,229, Jan. 17, 1979, Pat. No. 4,372,977, which is a continuation of Ser. No. 802,012, May 31, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 429,444
Int. Cl.³ A01N *31/14*
U.S. Cl. 514—717 **6 Claims**

1. A method of killing lice or their ova which comprises applying to a human or animal host in need of such control, as the only toxicant an effective toxic amount of at least one aryl alkyl ether derivative of polyoxyethylene having an HLB of about 2.5–13.5, the aryl alkyl moiety containing 8 to 14 carbon atoms.

4,497,832

CHEWING GUM COMPOSITION HAVING ENHANCED FLAVOR-SWEETNESS

S. Rao Cherukuri, Towaco, N.J.; Kenneth P. Bilka, Floral Park, and Frank Hriscisce, Astoria, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 18, 1983, Ser. No. 485,684
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **15 Claims**

1. A sugar containing chewing gum composition, which comprises a chewing gum base having incorporated therein a sweetener, and a flavoring agent sorbed in the microporous channels of water-soluble spherical particles having a bulk density of about 3.0 to about 6.0 lbs./cu. ft.

4,497,833

MYCOSTATIC WHEY AND PROCESS OF MANUFACTURE

Thomas M. Anderson, Emeryville, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 20, 1982, Ser. No. 379,841
Int. Cl.³ A23C *21/02*; C12P *7/52*
U.S. Cl. 426—41 **4 Claims**

1. In a process for the manufacture of fermented whey having mycostatic activity in which the fermenting agent is a bacterium, and wherein said fermentation is conducted at a temperature, for a sufficient period of time, and in a medium conductive to fermentation, for substantially all of said whey to be converted into the fermented form, the improvement of using as the fermenting agent the bacterium *Propionibacterium acidi-propionici* #B 3568.

4,497,834

METHOD OF MAKING A DAIRY-BASED FOOD PRODUCT

Frank E. Barta, 2307 Fillmore St. Northeast, Minneapolis, Minn. 55418

Filed Aug. 30, 1982, Ser. No. 412,762
Int. Cl.³ A23C *9/12, 20/00*
U.S. Cl. 426—42 **14 Claims**

1. A method of making a dairy-based food product which method comprises:
(A) condensing fatted or defatted milk to produce a mixture having substantially the proportion of milk solids and moisture desired in the final food product and reducing the concentration of lactose to below about 15 percent by weight at which crystallization occurs by hydrolysis or by ultra-filtration or molecular sieving,
(B) cooking the condensed milk of a sufficient solids level and heating at a temperature and for a time effective to produce a gel-like consistency,
(C) agitating and blending the cooked milk mixture into a uniform homogeneous mass, and
(D) packaging the resulting product and cooling.

4,497,835

ARTIFICIALLY SWEETENED BEVERAGE MIXES AND PROCESS THEREFOR

Winston Adolph A., Fayetteville, N.Y., assignor to Alberta Gas Chemicals, Incorporated, Parsippany, N.J.

Filed Jan. 10, 1983, Ser. No. 456,986
Int. Cl.³ A23L *2/00, 1/30, 1/27, 1/236*
U.S. Cl. 426—72 **23 Claims**

22. A method of manufacturing pre-sweetened, sugar-free powdered beverages which contains a mix which comprises hydrolyzed cereal solids, a food acid selected from the group consisting of citric, malic, and fumaric acids and mixtures thereof, a flavor, a clouding agent, vitamin C, aspartame, and a color, wherein the ratio of the combined weight of the natural cereal solids and the food acids to the weight of aspartame, is between from about 10:1 to about 20:1, comprising the steps:

(a) preblending all of the ingredients in the mix until the blend is uniform and free of balls of aspartame,
(b) feeding the blend through an agglomerator wherein the particles are uniformly wetted by spraying with live steam whereby the hydrolyzed cereal solids and food acids, which preferentially absorb the moisture, are partially dissolved and form a layer around each particle of aspartame, and
(c) drying and cooling the agglomerated particles to provide a free flowing blend.

4,497,836

MODIFIED WHEY PRODUCT AND PROCESS INCLUDING ULTRAFILTRATION AND DEMINERALIZATION

Robert F. Marquardt, Danville; Harold T. Pederson, Jr., Livermore, and Leo H. Francis, Burlingame, all of Calif., assignors to Dairy Technology Ltd., Baraboo, Wis.

Filed Aug. 6, 1982, Ser. No. 405,995
Int. Cl.³ A23C *21/00*
U.S. Cl. 426—239 **7 Claims**

1. A process for producing a whey derived product having a substantially undenatured whey protein content substantially greater than the protein content of raw edible source whey and a mineral salt content that is less than that of such whey comprising, the steps of subjecting edible whey to membrane ultrafiltration to produce a protein-rich retentate fraction and a lactose-rich permeate fraction, the permeate fraction having a mineral salt content of about 9–12%, dry solids basis, derived from the source whey, subjecting the permeate to demineralization to reduce its mineral salt content about 0.15–0.6%, dry solids basis, and blending the demineralized permeate with the protein-rich retentate fraction in such proportions as to provide desired lactose and mineral salt contents in the blended product.

4. A process for preparing a modified whey product, which comprises
separating a feed whey comprising protein, water, lactose and mineral salts by ultrafiltration to produce a protein-rich fraction and a permeate fraction including a substantial portion of the water, lactose and mineral salts;
demineralizing the permeate fraction to reduce its mineral salt content; and
blending the demineralized permeate fraction with the protein rich fraction forming the modified whey product wherein the mineral salt content is less than that of the feed whey and the protein is unaffected by the demineralization and is heat stable.

4,497,837

METHOD FOR ELECTROSTATIC, EPOXY COATING OF STEEL DRUM INTERIORS AND PRODUCT THEREOF

Donald E. Oswald, Arroyo Grande, Calif., assignor to Kaiser Steel (Delaware), Inc., Fontana, Calif.

Continuation of Ser. No. 917,807, Jun. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 759,342, Jan. 14, 1977, abandoned. This application Apr. 13, 1982, Ser. No. 368,033
Int. Cl.³ B65D *90/02, 85/72;* B05D *1/06*
U.S. Cl. 426—398 **10 Claims**

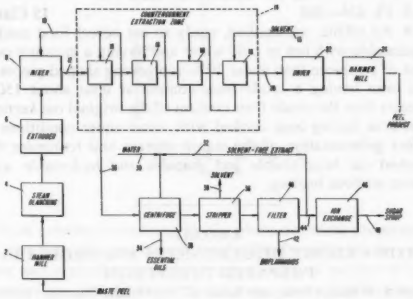
2. A steel drum container intended for use in packaging corrosive materials having an adherent, durable internal coating for which said coating is a cured epoxy resin having a thickness ranging from 1.5 to 3.0 mils and is applied to the shell and lids comprising the parts of said steel container exposed to said corrosive materials, wherein said container parts are successively subjected to a primer coat of iron phosphate, heated to a surface temperature within the range of 180° to 220° F., electrostatically spray coated with an epoxy resin powder that melts and fuses to a thickness of 1.5 to 3.0 mils, and is subjected to a temperature within the range of 390° to 420° F. for a period of 5 to 12 minutes to enable the coat to set and cure and to form a non-corrosive adherent durable internal coating, said coating being resistant to rupture or cracking and resistant to penetration by said corrosive materials.

4,497,838

PROCESS FOR THE PRODUCTION OF USEFUL PRODUCTS FROM ORANGE PEEL

James M. Bonnell, Bradenton, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Continuation of Ser. No. 349,605, Feb. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 99,007, Nov. 30, 1979, abandoned. This application Apr. 20, 1983, Ser. No. 486,829
Int. Cl.³ A23L *1/28;* C11B *9/02*
U.S. Cl. 426—429 **15 Claims**



1. A process for the recovery of useful products from citrus fruit peels comprising:
subjecting the citrus fruit peel to countercurrent solvent extraction in a solvent extraction zone with a solution comprising a non-aqueous water-miscible solvent selected from the group consisting of lower alcohols, lower ketones, and mono and dialkyl ethers of ethylene glycol, said solution as it is fed to said solvent extraction zone comprising said water-miscible solvent in substantially undiluted form, said peel being contacted with said solution for a period of time sufficient to provide an aqueous extract containing substantially all of the sugars, essential oils and bioflavanoids from the peel which are present therein;
removing said solvent-extracted peel from contact with said solution;
drying the solvent-extracted peel to produce a solid product which is high in cellulose and pectin;
diluting said extract from the solvent extraction step with sufficient aqueous diluent to render insoluble the essential oils contained in the extract;
separating the essential oils from the extract;
removing the non-aqueous solvent from the extract to render insoluble the bioflavanoids present in the extract;
separating the insoluble bioflavanoids from the extract; and
purifying the resulting extract to produce a sugar syrup product.

4,497,839

METHOD OF PROCESSING UNMILLED RICE WITH CHAFFS ATTACHED THERETO

Motoichi Hashimoto, Nota Mansion 304, 2-49 Haramachi, Shinjuku-ku, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,652
Claims priority, application Japan, Nov. 2, 1982, 57-191924
Int. Cl.³ A23L *1/10;* A23P *1/00*
U.S. Cl. 426—482 **7 Claims**

1. A method of processing unmilled rice and rice with chaffs attached thereto to produce a rice product having high nutritive value comprising immersing the unmilled rice with chaffs about to be sprouted in water for a predetermined time; freeing the rice of water affixed thereto; roasting the rice in a kiln to a moisture content of 13 to 18 weight percent at a temperature in

the range of 90° to 170° C.; thereafter steaming the rice for a period of time of about 20 minutes at a temperature in the range of 100° to 120° C.; pressuring the steamed rice by rolls, and freeing the rolled rice of peeled-off chaffs.

4,497,840

CEREAL FOODS MADE FROM OATS AND METHOD OF MAKING

Max R. Gould, Homosassa Springs, Fla.; David P. Bone, and Fu H. Hsieh, both of Palatine, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 278,167, Jun. 29, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,670

Int. Cl.[3] **A23J** *1/12;* **A23B** *4/04*

U.S. Cl. 426—560 **15 Claims**

9. An edible, pre-cooked, ready to eat cereal food readily hydratable with hot or cold water and having a moisture content of not more than about 10% comprising shaped pieces of oat bran having a crude fiber content at least about 150% greater than the crude fiber content of the original oat kernels, said bran having been cooked with water under conditions to effect gelatinization of the starch therein and to render the cooked oat bran pliable and shapable and hydratable with water without heating.

4,497,841

LOW CALORIE DESSERT MIXES AND PRODUCTS PREPARED THEREFROM

John A. Wudel, Orem, and Lavar C. McMillan, Murray, both of Utah, assignors to Wudel Inc., Orem, Utah

Continuation-in-part of Ser. No. 357,839, Mar. 15, 1982, abandoned. This application Mar. 15, 1983, Ser. No. 475,501

Int. Cl.[3] **A23G** *9/02*

U.S. Cl. 426—565 **46 Claims**

1. A liquid dessert mix suitable for freezing having a solids content of between about 24 and 49% by weight wherein the percent by weight solids comprises about:

(a) 2 to 25% butterfat,

(b) 8 to 15% nonfat milk solids selected from the group consisting of nonfat dry milk, dry buttermilk, whey, whey protein concentrate, sodium caseinate, low lactose skim milk powder and mixtures thereof wherein at least 10% by weight of said non fat milk solids consists of a whey protein concentrate having a protein content of between 25 and 75% by weight:

(c) 7 to 18% of a fructose-based sweetener containing at least 75% by weight fructose selected from the group consisting of substantially pure crystalline fructose, frutose noncarbohydrate sweetener combinations and fructose carbohydrate combinations,

(d) 0 to 1.5% egg yolk solids, and

(e) 0.5 to 2.5% of a stabilizer and emulsifier wherein the stabilizer contains from about 20 to 50% by weight of a microcrystalline cellulose.

4,497,842

BEVERAGES OBTAINED FROM ALCOHOLIC TREATMENT OF ROASTED CITRUS FRUIT PEELS

Joseph R. Ehrlich, 1793 Riverside Dr., New York, N.Y. 10034, and Hildegard Hess, 2730 Bennett Ave., New York, N.Y. 10040

Continuation of Ser. No. 340,327, Jan. 18, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 471,820

Int. Cl.[3] **C12G** *3/00*

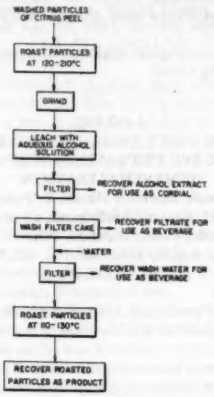
U.S. Cl. 426—592 **6 Claims**

1. A method of making a beverage product, which comprises:

a. roasting citrus fruit peel particles at a temperature of from about 120° to about 210° C.;

b. admixing from about 4 to about 6 parts by weight of aqueous ethanol per part by weight of said roasted particles for up to several minutes, said aqueous ethanol comprising from about 30 to about 75 parts by weight of ethanol and about 75 to about 35 parts by weight of water;

c. separating said particles from the mixture of particles and liquid obtained from step (b);



d. washing said separated particles with at least 15 parts by weight of water per part by weight of said particles; and

e. collecting spent wash water recovered from step (d) as a beverage.

4,497,843

STABLE LIQUID OIL-IN-WATER EMULSION AND PROCESS

Werner Errass, Riehen, and Eduard Waldmeier, Allschwil, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 6, 1983, Ser. No. 558,487

Claims priority, application Switzerland, Jul. 15, 1983, 3883/83

Int. Cl.[3] **A23D** *5/00*

U.S. Cl. 426—602 **7 Claims**

1. An oil-in-water emulsion comprising from 10 to 50% of oil, from 0.3 to 0.7% by weight of *Carraghenan iota* and from 0.1 to 0.4% by weight of *Gummi arabicum,* said emulsion being in the form of drops of oil having a diameter of from 0.5 to 4 mm which are suspended individually in a stable manner in an acid aqueous phase.

4. A process for the production of an oil-in-water emulsion according to claim 1, which comprises the steps of producing an aqueous phase by adding from 1.5 to 3.4% by weight of an edible acid, from 0.4 to 0.9% by weight of *Carraghenan iota,* from 0.15 to 0.5% by weight of *Gummi arabicum,* salt and seasoning to water, thickening said *Carraghenan iota* by heating said aqueous phase, cooling said aqueous phase to from 15° to 25° C. and mixing said aqueous phase with oil to form said emulsion.

4,497,844

METHOD FOR PRODUCING A RESTRUCTURED FOOD PRODUCT

Jaxon O. Hice, and Gerald J. Webb, both of Charlotte, N.C., assignors to Fryday Corporation, Charlotte, N.C.

Division of Ser. No. 169,285, Aug. 18, 1980, Pat. No. 4,303,008. This application Aug. 14, 1981, Ser. No. 292,873

Int. Cl.[3] **A23L** *1/33;* **A23P** *1/00*

U.S. Cl. 426—643 **6 Claims**

1. A method of producing a restructured food product from small pieces of said food product, said method comprising the steps of:

(a) comminuting a food product to form a paste having a fluent consistency;

(b) providing a pair of opposed movable surface portions formed to provide a mold cavity therebetween, and moving said surface portions into contact with one another to close said mold cavity;

(c) injecting said paste into said mold cavity under a high pressure through an opening in at least one of said surface portions and closing said opening to seal said mold cavity, said injection of said paste into said mold cavity being carried out at a flow rate that is rapid enough to prevent premature cooking of portions of said paste within said mold cavity;

(d) maintaining said paste in said mold cavity at a pressure above a predetermined level while simultaneously maintaining the walls of said mold cavity within a temperature range that is high enough to rapidly cook said paste and low enough to prevent volatiles and aromatics in said paste from being driven off; and

(e) separating said opposed surfaces and removing said cooked food product from said mold cavity.

4,497,845

ACIDULATED MEAT EMULSION

Phillip J. Percel, Parma; Douglas W. Perkins, Medina, and Anthony V. Petricca, Rocky River, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Mar. 11, 1982, Ser. No. 356,940
Int. Cl.³ A23L *1/31*
U.S. Cl. 426—646 **4 Claims**

1. A meat emulsion comprising a particulate meat acidulant for dispersion in said meat emulsion, in preserving and/or texturizing amounts, for acidulating the same, said acidulant consisting essentially of

(a) a solid acid core particle and

(b) a continuous, substantially impervious coating on said acid core particle, said coating being a water soluble, film-forming, edible, bland, starch hydrolysate or protein, said starch hydrolysate or protein having a water solubility sufficient to produce a pumpable solution at about 30–40% solids concentration, based on solution weight;

said acidulant having a particle size not substantially in excess of about 20 mesh, U.S. Standard Sieve;

the weight ratio of solid acid core particle to starch hydrolysate or protein coating being in the range of about 90-50:10-50.;

said starch hydrolysate or protein being spray applied to the solid acid core particle in a fluid bed spray applicator.

4,497,846

SUGARLESS HARD CANDY

Bernard Boursier, Haisnes; Guy Bussiere, La Gorgues; Francis Devos, Hazebrouck, and Michel Hughette, Merville, all of France, assignors to Roquette Freres, Lestrem, France

Filed Apr. 28, 1983, Ser. No. 489,468
Claims priority, application France, Apr. 30, 1982, 82 07586
Int. Cl.³ A23G *3/00*; A23L *1/09*
U.S. Cl. 426—660 **14 Claims**

1. Sugarless hard candy essentially consisting of

hydrogenated starch hydrolysate, prepared from a starch hydrolysate having a DE of 42 to 60, and of

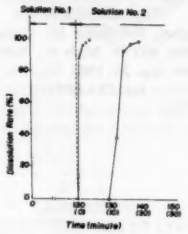
gum arabic in an amount of between 1% and 8% by weight with respect to the finished product, and/or CMC in an amount comprised between 0.2 and 2% by weight with respect to the finished product.

4,497,847

PROCESS FOR COATING SOLID PHARMACEUTICAL PREPARATIONS AND COATED PREPARATIONS THUS OBTAINED

Kozo Kurihara; Izuo Ichikawa; Hisanori Nakane, and Yoshihiko Ikegami, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,718
Claims priority, application Japan, Oct. 12, 1982, 57-177595
Int. Cl.³ A61K *9/38*
U.S. Cl. 427—3 **14 Claims**



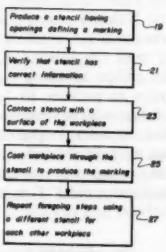
1. A process for coating a solid pharmaceutical preparation in which an aqueous suspension of a film-forming enteric polymer and a plasticizer therefor is applied to a surface of said preparation and the aqueous phase is removed, wherein the plasticizer is selected from monoesters, diesters and mixtures thereof of glycerol with a saturated aliphatic carboxylic acid having from 6 to 10 carbon atoms.

4,497,848

STENCILLING A UNIQUE MACHINE-READABLE MARKING ON EACH OF A PLURALITY OF WORKPIECES

Anthony S. Baran, East Hempfield Township, Lancaster County, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,513
Int. Cl.³ B05D *5/12*; B23K *9/00*; B41C *1/14*
U.S. Cl. 427—106 **20 Claims**


Produce a stencil having openings defining a marking
19
Verify that stencil has correct information
21
Contact stencil with a surface of the workpiece
23
Cast workpiece through the stencil to produce the marking
25
Repeat foregoing steps using a different stencil for each other workpiece
27

13. A method for depositing a different desired bar-code marking on each of a plurality of glass workpieces comprising

A. providing a strip of sheet material,

B. using a focused laser beam, burning openings through said strip to produce a plurality of stencils for stencilling said desired bar-code markings, said stencils being in a sequential arrangement in said strip,

C. verifying that said stencils are for said desired markings,

D. advancing a succession of workpieces to which a bar-code marking is to be applied.

E. contacting one of said stencils with the surface of one of said succession of workpieces,

F. applying paint through the openings in said stencil while it is contacting said surface,

G. removing said stencil from said surface,

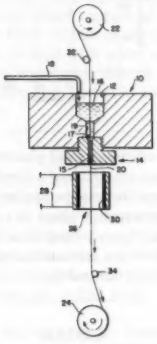
H. and repeating steps E, F and G for each of the remaining plurality of workpieces using a different one of said plurality of stencils for each workpiece.

14. The method defined in claim 13 wherein said workpiece is a glass envelope part for a cathode-ray tube.

4,497,849
PROCESS FOR POLYMER COATING ELECTRICAL CONDUCTORS

Howard C. Hughes, 105 Cedar St., Cornwall, Pa. 17016, and Roy D. Bertolet, 653 W. Main St., Palmyra, Pa. 17078

Filed Sep. 26, 1983, Ser. No. 534,936
Int. Cl.³ B05D 5/12
U.S. Cl. 427—120 2 Claims



1. A process for polymer coating metallic helically coiled electrical conductors for pacemaker leads with an adherent polymer coating consisting of the steps dissolving a polyether or polyester segmented polyurethane polymer in dimethlyacetamide or dimethyl-formamide to provide a solution of the polymer, maintaining a pool of the solution in a container, a bottom outlet orifice in the container sized to freely receive the conductor and a film of the solution of the desired thickness, threading the helically coiled conductor to pass downwardly through the container, to effect coating of the helically coiled conductor with the solvent dissolved polymer as it passes through the orifice, adjusting the viscosity of the polymer/solvent solution to provide 10-30% weight/volume of polymer in accordance with the conductor diameter, speed of coating and orifice diameter to provide the desired coating thickness, directing the helically coiled conductor after passing through the orifice through a heated chamber heated to about 150° F. but less than about 165.5° F. to about 166° F. to evaporate the volatile solvent and dry the polymer on the helically coiled conductor.

4,497,850
METHOD FOR SURFACE TREATMENT OF A MAGNETIC AMORPHOUS ALLOY

Akimi Umezono; Hironobu Kawasaki; Takashi Sato, and Tomohiko Hayashi, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,140
Claims priority, application Japan, May 14, 1983, 58-84505
Int. Cl.³ H01F 10/02
U.S. Cl. 427—127 8 Claims

1. A method for surface treatment of a magnetic amorphous alloy comprising the steps of:

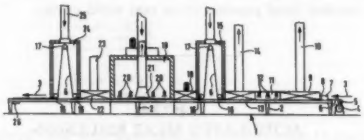
applying, on a surface of the magnetic amorphous alloy, a predetermined amount of an acidic aqueous solution containing chromic acid, phosphoric acid, and a fluorine compound; and

drying and baking the acidic aqueous solution, thereby forming, on the magnetic amorphous alloy, a film substantially comprised of a chromium and a phosphoric compound.

4,497,851
METHOD FOR THE FABRICATION OF TRANSFERABLE ENAMEL SHEET

Hubertus M. de Vroom, Warmond, Netherlands, assignor to Nordipa AG, Schwerzenbach, Switzerland

Division of Ser. No. 315,295, Oct. 27, 1981, Pat. No. 4,451,522, which is a continuation-in-part of Ser. No. 205,301, Nov. 10, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,232
Claims priority, application Netherlands, Oct. 29, 1980, 8005935
Int. Cl.³ B41M 3/12
U.S. Cl. 427—147 5 Claims



1. A method for the fabrication of a transferable enamel sheet formed as a laminate, comprising the steps of applying a release layer on one side of a web-type carrier sheet, applying a neutralization layer comprising a wax consisting of a mixture of branched and unbranched hydrocarbon chains with an average length of 30 carbon atoms and a COOH group at several places on the chain on the coated side of said carrier sheet, applying a pressure-sensitive adhesive layer on said neutralization layer, curing said adhesive layer, applying an enamel layer on said adhesive layer, and curing said enamel layer.

4,497,852
MARINE ANTI-FOULING COATING COMPOSITION

Thomas A. Lane, 314 Foggy Ridge Pkwy., Lutz, Fla. 33549; Murray Rosen, 10000 W. Bay St., Seminole, Fla. 33542, and Maxie E. Quinn, 1933 W. Arvis Cir., Clearwater, Fla. 33516

Filed Nov. 3, 1982, Ser. No. 439,017
Int. Cl.³ B05D 5/00
U.S. Cl. 427—287 20 Claims

1. A single component coating composition having optically clear film characteristics particularly suitable for preventing growth of fouling organisms on marine structures, said composition comprising:

a hydroxy functional acrylic polymer;

a biologically active organotin polymer of the formula

$$R_3Sn—OOCR'$$

wherein R is selected from the group consisting of lower alkyl, phenyl and benzyl and R' is a polymerizable radical selected from the group consisting of vinyl, methyl vinyl and vinylphenyl;

a polyol reactive polyisocyanate; and

a reaction inhibiting solvent medium comprising a mixture of at least one low molecular weight ketone and a co-solvent selected from the group consisting of hydroxyethers, linear alcohols and isopropyl alcohol.

12. The process of protecting marine structures against the growth of fouling organisms which comprises treating said structures with a hydrophobic polymeric film, said film produced by removal of solvent from a single component composition produced by comingling

a hydroxy functional acrylic polymer;

a biologically active organotin polymer of the formula

$R_3Sn—OOCR'$

wherein R is selected from the group consisting of lower alkyl, phenyl and benzyl and R' is a polymerizable radical selected from the group consisting of vinyl, methylvinyl and vinylphenyl;

a polyol reactive polyisocyanate; and

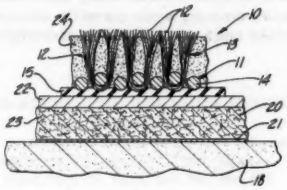
a reaction inhibiting solvent medium comprising a mixture of at least one low molecular weight ketone and a co-solvent selected from the group consisting of hydroxyethers, linear alcohols and isopropyl alcohol.

4,497,853

SYNTHETIC TURF CARPET GAME PLAYING SURFACE

Seymour A. Tomarin, Box 730, St. Catharines, Ontario, Canada (L2R 6Y6)

Filed Feb. 9, 1984, Ser. No. 578,727
Int. Cl.³ A01N *3/00*; A41G *1/00*
U.S. Cl. 428—17 **8 Claims**



1. A game playing surface, such as for golf, formed of a synthetic pile carpet positioned upon a stabilized support base surface, comprising:

a relatively thick mat laid upon said support base surface, with said mat being formed of loosely felted, somewhat springy, coarse coconut hair fibers, so that the mat resiliently resists compacting;

a filling of generally coarse sand granules which substantially fill the interstices between the mat fibers, wherein the filled mat forms a shock absorbent, compact resistant layer over the support base surface;

a pile carpet laid over said mat, with the carpet formed of generally equal length, upwardly extending, synthetic fibers fastened at their lower ends to a carpet primary base sheet, so that the fibers give a substantially grass-like appearance;

a uniform thickness coating of sand-like granules covering the carpet primary base sheet and covering the fibers for a substantial portion of their heights, such as close to their upper free ends, and with the coating substantially filling the interstices between the fibers.

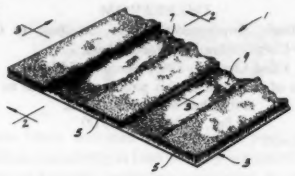
4,497,854

ARTIFICIAL CROSS-COUNTRY SKI SURFACE WITH PAIR OF BENT OVER SKI TRACKS

Ed M. Milner, 411 Clark, Kirkwood, Mo. 63122, and John R. Mykrantz, 2329 N. Ballas, St. Louis, Mo. 63131

Filed Mar. 16, 1984, Ser. No. 590,509
Int. Cl.³ A01N *3/00*
U.S. Cl. 428—17 **19 Claims**

1. An artificial surface for simulated cross-country skiing comprising an elongate flat flexible base and a multiplicity of extruded strips of synthetic resin material forming relatively stiff smooth-surfaced blade-like members secured to and substantially covering one face of the base, said blade-like members projecting generally perpendicularly from said one face of the base except in two generally parallel spaced-apart zones extending longitudinally of the base, said blade-like members in said zones being bent over in one direction extending generally lengthwise of the base to provide a pair of generally parallel ski tracks along the base, said bent-over blade-like members having outer end portions angling away from the base and terminating in tips pointing in said one direction, said base being



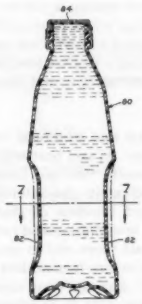
adapted to be placed on the ground with said blade-like members facing upwardly and said bent-over blade-like members pointing in a direction opposite the direction of ski movement along said tracks.

4,497,855

COLLAPSE RESISTANT POLYESTER CONTAINER FOR HOT FILL APPLICATIONS

Purushottam D. Agrawal, South Windsor, Conn., and John F. Mandell, Wayland, Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 123,000, Feb. 20, 1980, Pat. No. 4,318,882.
This application May 6, 1981, Ser. No. 261,061
Int. Cl.³ B65D *1/02*
U.S. Cl. 428—35 **16 Claims**



1. A collapse-resistant, molecularly oriented, heat set polyester container having at least one preselected inwardly thermoelastically deformable region for at least partially relieving negative pressure tending to collapse the container when hot filled, sealed and the contents allowed to cool.

4,497,856

MULTI-LAYERED HOLLOW CONTAINER

Nobuyuki Iwasawa, Yokohama, and Keiji Kazato, Chiba, both of Japan, assignors to Toppan Printing Co. Ltd., Japan

Filed Dec. 22, 1982, Ser. No. 452,195
Int. Cl.³ B65D *11/00*
U.S. Cl. 428—35 **5 Claims**

1. A multi-layered container comprising an inner layer, an outer layer, and an intermediate layer therebetween, said inner layer comprising a thermoplastic ethylene-tetrafluoroethylene alternating copolymer resin, said outer layer comprising a polyolefin, and said intermediate layer comprising from about 30 to about 80% by weight of ethylene-vinyl acetate copolymer graft-modified with an unsaturated glycidyl compound, from about 5 to about 35% by weight of a gum rubber com-

pound, and from about 10 to about 50% by weight of a polyolefin.

4,497,857

FLEXIBLE HEAT-SEALABLE SHEET AND BAG MADE THEREFROM

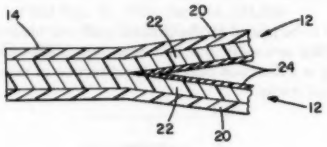
Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Oct. 31, 1983, Ser. No. 547,136

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—35 **8 Claims**



1. A flexible bag made of two coextruded sheets heat-sealed to each other at bond regions, said heat-sealed sheets each comprising

an outer structural layer,

a heat-sealing layer on said structural layer, and

a nonsticky cover layer on said heat-sealing layer at regions other than said bond regions, said cover layer being sufficiently thin and being made of material with strength and melt characteristics appropriate so that exposure and bonding of said heat-sealing layers to each other occurred at said bond regions when heat-sealing temperature and pressure were applied to said bond regions.

5. A method of making a flexible heat-sealable multilayered object comprising coextruding a multilayered sheet comprising

a structural layer,

a heat-sealing layer on said structural layer, and

a nonsticky cover layer on said heat-sealing layer, said cover layer being sufficiently thin and being made of material with strength and melt characteristics appropriate to cause exposure and bonding of said heat-sealing layer when heat-sealing temperature and pressure are applied to a bond region of said sheet, and to cause the sheet to have nonsticky surfaces before heat-sealing and after heat-sealing at regions other than said bond region further comprising heat sealing said sheet to an identical sheet to form a flexible bag.

4,497,858

TILE FOR AN ENTRANCE MAT

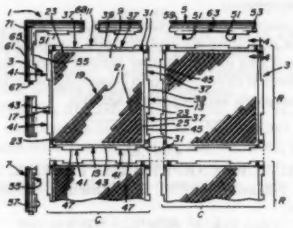
André Dupont, 409 Marquette St., Longueuil, Canada J4K 4G8 and Paul Laurent, 841 Hélène Boulé St., Boucherville, Canada J4B 5V6

Filed Sep. 9, 1983, Ser. No. 530,760

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—44 **10 Claims**

1. A tile having a flat imperforate base with a top surface and a shape defined by straight sides, said tile comprising low straight walls protruding from said top surface along each side of the base, said wall forming the entire perimeter of the base to hold water on the base, means for use in removably connecting the tile to adjacent identical tiles to form a mat with the outside surface of a straight wall of the tile abutting the outside surfaces of the straight walls of adjacent tiles, scraper members upstanding from and uniformly distributed over said top surface within the confines of said wall, the scraper members comprising a series of spaced-apart ribs extending across the base, the ends of each rib being spaced a short distance from the nearest wall, trough areas between and around said scraper members and between said scraper members and said walls to allow water to flow between said scraper members and reach said walls, and water-directing means formed through each straight wall, said water directing means being located between the corners defined by the junctions of successively



adjacent straight walls, said water-directing means positioned for alignment with the water-directing means of adjacent connected tiles for directing water out of the tile to adjacent tiles when the water reaches a certain level on the top surface of the base.

4,497,859

INSULATING INSERT FOR STORAGE OR TRANSPORTATION CONTAINER

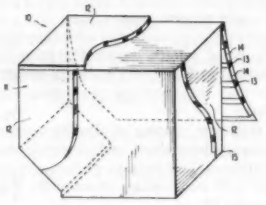
Hansjörg W. Baumann, Mühlau, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Oct. 14, 1983, Ser. No. 541,903

Claims priority, application Switzerland, Nov. 26, 1982, 6885/82

Int. Cl.³ E04B *1/74*

U.S. Cl. 428—71 **2 Claims**



1. Mobile and collapsible insulating insert for a storage and transportation container, consisting of (i) a hood, which consists of connected outside surfaces made of non-foamed, flexible material, the mass and contours of which correspond to the inside surfaces of the container, and which is provided with pockets of non-foamed, flexible material, projecting into the inside of the hood, disposed closely one beside the other, and extending over the length of the outside surfaces, said pockets being filled tightly and alternatingly with open-celled foam plastic cores and closed foam plastic cores, and which has a releasable closing arrangement, which permits connection temporarily of at least one of the outside surfaces to the adjacently-located outside surfaces of (ii) an insulating bottom plate and (iii) a fluid-tight bottom trough, which is attached between the bottom of the storage and transportation container and the bottom plate of the insulating insert.

4,497,860
IMAGEABLE PRISMATIC ARRAY

Harold E. Brady, Jr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1978, Ser. No. 970,548
Int. Cl.³ G02B 27/10
U.S. Cl. 428—156 9 Claims

1. An article suitable for the preparation of projection transparencies capable of providing a projected image based on non-diffused refraction of light comprising a sheet of transparent thermoplastic material having molded on one side thereof a linear prism array having sufficient molding stresses locked therein to exhibit a variation of at least 0.2 between the maximum and minimum optical density viewed through two polarized sheets with their axes of polarization perpendicular to each other wherein a linear prism array is on one side of the sheet and a diffraction grating is on the other side.

4,497,861
WATER-REPELLENT, ABRASION RESISTANT COATINGS

John F. Kistner, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1983, Ser. No. 496,572
Int. Cl.³ B32B 3/00, 9/04, 27/38
U.S. Cl. 428—201 13 Claims

1. A developed photographic image having adhered to the outer surface thereof an abrasion-resistant, water-repellent layer comprising the reaction product of:
(1) more than 60% by weight of an epoxy-terminated silane,
(2) 15 to 30% by weight of limonene monoxide, and
(3) less than 10% by weight of a material copolymerizable with epoxy groups, other than limonene monoxide.

4,497,862
MOISTURE VAPOR PERMEABLE SHEET MATERIALS

George Cioca, Coatesville; George F. Feeley, Downington, both of Pa.; Joseph B. Brabson, Wilmington, Del., and Peter Barth, Neuwied, Fed. Rep. of Germany, assignors to Seton Company, Newark, N.J.

Division of Ser. No. 314,536, Oct. 26, 1981, Pat. No. 4,415,628. This application Aug. 8, 1983, Ser. No. 521,147
Int. Cl.³ B32B 27/34, 27/40
U.S. Cl. 428—220 19 Claims

1. A moisture vapor permeable sheet material comprising: a homogeneous mixture of a synthetic polymeric material and a protein, said sheet material being moisture vapor permeable and nonpenetrable by liquid water, and said protein being selected from the group consisting of collagen and elastin and derivatives of collagen and elastin.

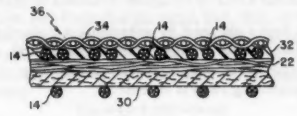
2. The sheet material of claim 1 having a thickness of up to 5 mils.

4,497,863
LAMINATED WEFT INSERTION FABRIC

Jerry A. Cogan, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 7, 1984, Ser. No. 587,154
Int. Cl.³ B32B 7/00
U.S. Cl. 428—253 5 Claims

1. A laminated fabric comprising a shell fabric laminated to a substrate fabric, said substrate fabric being a warp knit fabric having a face side and a rear side, a plurality of rows of continuous filament textured polyester weft yarn laid in on one side of said knit fabric, a layer of non-woven fabric adjacent said weft yarn and a plurality of wales of a chain stitched polyester spaced along the course direction of said substrate fabric and being knit through said non-woven fabric and holding said



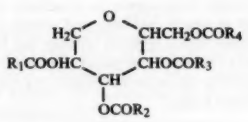
non-woven fabric and said weft yarns in position, said non-woven fabric containing at least 65% by weight of polypropylene fibers to provide insulating properties to said substrate fabric.

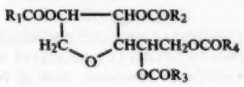
4,497,864
MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Nobutaka Yamaguchi; Takashi Yoneyama, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

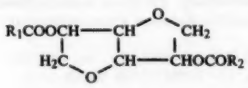
Filed Jul. 6, 1983, Ser. No. 511,359
Claims priority, application Japan, Jul. 6, 1982, 57-117402
Int. Cl.³ G11B 5/70, 5/72
U.S. Cl. 428—323 13 Claims

1. A magnetic recording medium comprising a support base having coated thereon a magnetic layer comprised of ferromagnetic powders dispersed in a binder, and at least one of anhydrosorbitol fatty acid non-hydroxy ester compounds represented by the formula selected from the group consisting of (I), (II) and (III):


(I)


(II)

and


(III)

wherein R_1, R_2, R_3 and R_4 each represents a saturated alkyl group having 1 to 22 carbon atoms or an alkylene group having 2 to 22 carbon atoms.

4,497,865
POLYETHYLENE TEREPHTHALATE FILM, PROCESS FOR THE PRODUCTION THEREOF AND MAGNETIC RECORDING MEDIUM THEREFROM

Satoyuki Minami; Kazuhiro Tanaka, and Takeshi Nishioka, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,960
Claims priority, application Japan, Feb. 17, 1982, 57-22593; Mar. 5, 1982, 57-33801
Int. Cl.³ G11B 5/68
U.S. Cl. 428—336 9 Claims

1. A magnetic recording medium comprising a polyethylene terephthalate film having the sum of F-5 values in longitudinal

and transverse directions of 3500 to 5000 kg/cm^2, absolute heat shrinkage in longitudinal and transverse directions at 100° C. of up to 2.5% and an amorphous orientation factor of −1.5 to 0.5 and magnetic layer(s) formed on at least one surface of the film,

said film being obtained by subjecting a polyethylene terephthalate sheet to multi-stage longitudinal stretching, transverse stretching and biaxial restretching, wherein the total stretching ratio is at least 27.

4,497,866

SUCKER ROD

De Witt R. Petterson, Dover; John Skelton, Sharon, and David S. Brookstein, Needham, all of Mass., assignors to Albany International Corp., Menands, N.Y.

Continuation-in-part of Ser. No. 297,761, Aug. 31, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,646

Int. Cl.^{3} **B32B** *15/00;* **B25G** *3/00;* **D02G** *3/00*

U.S. Cl. 428—365 **7 Claims**

1. A rod assembly comprising in combination a core component and a sheath component and having an elongate cross section, said sheath component consisting of an anisotropic interlaced assembly of non-metallic filamentary elements embedded in a polymeric matrix whereby the bending stiffness for deformations about an axis parallel to the major axis of the elongate cross section is less than the bending stiffness of the same core and sheath components in a radially symmetrical configuration, and in which said core and sheath components have load-elongation characteristics so that the ratio of the strain to the strain to break in the sheath is essentially equal to the ratio of the strain to the strain to break in the core throughout the working load range.

4,497,867

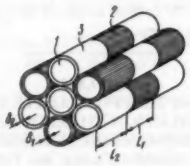
MULTIWIRE TWISTED CONDUCTOR AND DEVICE FOR COATING TWISTED CONDUCTOR WIRES

Diamar I. Bely; Valentin P. Mardanov, both of Moskovskoi; Gennady I. Meschanov, Moscow; Izyaslav B. Peshkov, Moscow; Anatoly P. Povelichenko, Moscow, and Jury M. Timoshin, Moskovskoi, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky, Proektno-Konstruktorsky I Tekhnologichesky Institut Kabelnoi Promyshlennosti "VNIIKP", U.S.S.R.

Filed Feb. 14, 1983, Ser. No. 466,358

Int. Cl.^{3} **B32B** *15/00;* **H01B** *5/00*

U.S. Cl. 428—385 **8 Claims**



1. An elongate multiwire twisted conductor, comprising:

a plurality of wires, each having a coating through substantially the full length thereof;

said coating serving to permit soldering and protection of said wire against corrosion;

said coating of at least one, but not all, of said wires, in substantially any conductor cross section substantially transverse to the axis of said multiwire twisted conductor, comprising a fluxing composition; and

said coating of all other said wires in said substantially transverse cross section comprising a fusible, metallic soldering material.

3. An elongate multiwire twisted conductor comprising:

a plurality of wires, each having a coating through substantially the full length thereof;

said coating serving to permit soldering and protection of said wire against corrosion; and

said coating consisting of alternating areas of a fluxing composition coating and a fusible, metallic soldering material coating through substantially the full length of said wires.

4,497,868

VERY FINE DENIER SYNTHETIC FIBERS

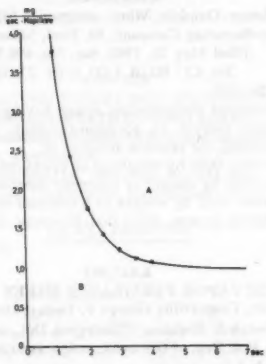
Ulrich Reinehr; Toni Herbertz, both of Dormagen; Hermann J. Jungverdorben, Grevenbroich, and Joachim Dross, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 213,531, Dec. 4, 1980, Pat. No. 4,400,339. This application Feb. 22, 1983, Ser. No. 468,620

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951803

Int. Cl.^{3} **D02G** *3/00*

U.S. Cl. 428—400 **3 Claims**



1. Synthetic fibers and filaments which consist essentially of acrylonitrile polymers containing at least 40 percent by weight of acrylonitrile units, have an individual as-spun denier of 3 dtex at the most, the surface of which has longitudinal striae and furrows which run parallel to the fiber axis.

4,497,869

FORMED PRODUCT OF VERMICULITE AND METHOD FOR PRODUCING THE SAME

Osami Kamigaito; Haruo Doi, both of Nagoya, and Yoshiaki Fukushima, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Mar. 15, 1983, Ser. No. 476,014

Claims priority, application Japan, Mar. 19, 1982, 57-45448

Int. Cl.^{3} **B32B** *3/26*

U.S. Cl. 428—402 **23 Claims**

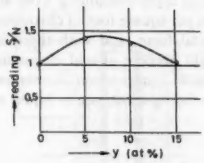
1. A vermiculite product comprising thin leaves of vermiculite containing cations of at least one element (selected from the group consisting of copper, aluminum, manganese, a Group II element of the Periodic Table, a Group IV element of the Periodic Table and a Group VIII element of the Periodic Table) substituted for exchangeable cations retained therein, said substituted cations being substantially uniformly distributed on surfaces of said thin leaves and among layers thereof.

4,497,870

MAGNETO-OPTICAL RECORDING MEDIUM

Yoshihiko Kudo, Moriguchi; Hidetsugu Kawabata; Masahiro Birukawa, both of Hirakata; Noriaki Hara, Kadoma, and Akira Muto, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 6, 1983, Ser. No. 482,709
Claims priority, application Japan, Apr. 7, 1982, 57-58868
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—457 5 Claims



1. A magneto-optical recording medium comprising a magneto-optical recording medium having a high crystallization temperature, high stability and excellent signal-to-noise characteristics suitable for thermo-magnetic recording and magneto-optical reading, said recording medium comprising a non-magnetic substrate having thereon at least one layer of an amorphous rare-earth-3d-transition-metal alloy having a uniaxial magnetic anisotrophy, wherein said alloy has a composition expressed by the general formula:

$$(R_xM_{1-x})_{1-y}Ge_y$$

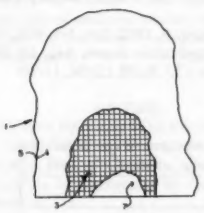
wherein R is at least one rare-earth metal, M is at least one 3d transition metal, and X and Y are in the ranges of $0.1<x<0.4$ and $0<y<0.2$, respectively.

4,497,871

RECONSTITUTED LEATHER AND METHOD OF MANUFACTURING SAME

Edward W. Henke, 916 Woodshire La., St. Louis, Mo. 63141

Filed Apr. 27, 1983, Ser. No. 489,001
Int. Cl.³ B32B *9/02, 25/02, 25/12, 31/26*
U.S. Cl. 428—473 20 Claims



1. Reconstituted leather comprising a mass of fibrous leather and a binder, said binder comprising natural rubber and an evaporatable solvent capable of dissolving, at least in part, said natural rubber, said fibrous leather being mixed with said binder, and said binder and said fibrous leather being formed into a desired sheet-like form, said solvent being an aromatic hydrocarbon liquid solvent, with the ratio of natural rubber to liquid solvent ranging between about 5–30 parts rubber to about 95–70 parts solvent, by volume.

4,497,872

SEALED IDENTIFICATION CARD WITH BLOCKING LAYERS

Joachim Hoppe, Munich, and Wolfgang Gauch, Otterfing, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Continuation of Ser. No. 420,869, Sep. 21, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 586,884
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138559
Int. Cl.³ B32B *27/06*
U.S. Cl. 428—483 6 Claims

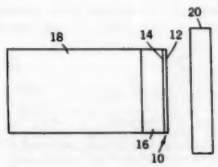
1. A multilayered identification card having an inner layer made of polyvinyl chloride and cover films on each side of the inner layer in the form of compound films having the structure polyvinyl chloride/blocking layer/polyvinyl chloride, wherein the thickness of said blocking layer is small compared to that of the card, whereby said blocking layer prevents the penetration of plasticizers into the inner layer of the card without adversely affecting the embossing properties of the card.

4,497,873

ISENTROPIC COMPRESSIVE WAVE GENERATOR IMPACT PILLOW AND METHOD OF MAKING SAME

Lynn M. Barker, Albuquerque, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 6, 1983, Ser. No. 456,147
Int. Cl.³ B22F *3/00, 3/26, 5/00, 7/00*
U.S. Cl. 428—547 19 Claims



1. A thin pillow member of substantially uniform thickness having an attachment surface for attaching the pillow member to an impactor member and an opposite impactor surface for impacting a target in an isentropic compressive wave generator, said pillow member comprising material at the impactor surface of low shock impedance and graduating substantially uniformly over the thickness of the pillow member to a material of high shock impedance at the attachment surface.

4,497,874

COATED CARBIDE CUTTING TOOL INSERT

Thomas E. Hale, Warren, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Apr. 28, 1983, Ser. No. 489,287
Int. Cl.³ B22F *3/00, 5/00, 7/00*
U.S. Cl. 428—551 15 Claims

1. A cobalt cemented carbide insert having at least one

surface adapted to be a wear resistant surface, said wear resistant surface comprising:

(a) a cobalt enriched zone extending in depth from 0–75μ and containing essentially metallic cobalt in an amount of at least about 2 times the average amount in the substrate;

(b) the enriched zone being discontinuous in cobalt on its outer surface, by having cobalt dispersion therein similar to that cobalt dispersion just below its surface; and

(c) a thin first layer of TiN deposited on said surface.

11. A cobalt cemented carbide insert having at least one

surface adapted to be a wear resistant surface, said wear resistant surface comprising:

(a) a cobalt enriched zone extending in depth from 0–75μ and containing essentially metallic cobalt in an amount of at least about 2 times the average amount in the substrate;

(b) the enriched zone being discontinuous in cobalt on its outer surface, by having cobalt dispersion therein similar to that cobalt dispersion just below its surface;

(c) a decarburization layer on said cobalt enriched surface comprising a mixture of Ti, TiC, TiCN; and

(d) a thin first layer of TiN deposited on said surface.

4,497,875

CERAMIC SUBSTRATE WITH METAL PLATE

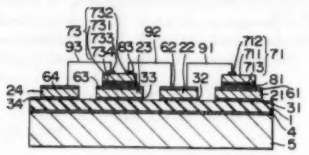
Hideo Arakawa; Keiichi Kuniya; Akio Chiba, and Seiki Shimizu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,945

Claims priority, application Japan, Feb. 10, 1982, 57-18790

Int. Cl.³ B32L *15/00*

U.S. Cl. 428—620 **16 Claims**



1. A ceramic substrate with a metal-containing plate comprising a metal-containing plate comprised mainly of copper, an insulation plate consisting of a sintered ceramic material and a brazing layer interposed between said metal-containing plate and said ceramic insulation plate for bonding said plates to each other, said brazing layer consisting of a mixture of copper oxide and copper.

4,497,876

CORROSION RESISTANT METAL COMPOSITE WITH ZINC AND CHROMIUM COATING

William E. Kidon, 12444 Pearl Rd., Chardon, Ohio 44024

Filed Mar. 16, 1983, Ser. No. 475,735

Int. Cl.³ C25D *5/12*

U.S. Cl. 428—624 **13 Claims**

1. A corrosion-resistant coated metal substrate having a coating including a metallic laminate protective composite containing adjacent layers of dissimilar metals, with said coating composite comprising:

(a) a metallic undercoating layer of a metal dissimilar from the metal of said substrate and free from other metals except in trace amounts;

(b) a metallic zinc layer on said undercoating layer and dissimilar from said undercoating metal; and,

(c) a heat-curable, substantially resin free topcoat layer from composition curable to a water resistant protective coating, said topcoat layer containing from about 20 to about 500 milligrams per square foot of chromium, as chromium, in non-elemental form, and with there being more than about 20 weight percent of said chromium as hexavalent chromium, said composition containing hexavalent-chromium-providing-substance in liquid medium.

4,497,877

METAL ARTICLE LAYERED WITH A NICKEL-PHOSPHORUS ALLOY AND A PROTECTIVE COATING

Gerrit Krijl, and Renaat E. Van de Leest, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1983, Ser. No. 491,101

Claims priority, application Netherlands, May 6, 1982, 8201849

Int. Cl.³ C25D *3/04*; B32B *9/00*

U.S. Cl. 428—628 **2 Claims**

1. A metal article which is coated with a layer consisting of a nickel-phosphorus alloy, which layer is coated on its outer surface by a protective layer, characterized in that the protective layer consists of a nickel-free conversion layer of a hydrated basic chromium phosphate which comprises the components $CrPO_4$ and $Cr(OH_3)$, wherein $Cr_2(SO_4)$, may be present and in which the weight ratio Cr:P:S = 1:(0.2–1.5):(0–0.5).

4,497,878

PHOTOMASK MATERIAL

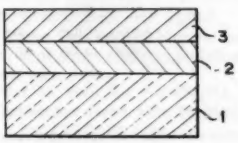
Takashi Hatano, and Akira Maruyama, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 405,724

Claims priority, application Japan, Aug. 19, 1981, 56-130460

Int. Cl.³ B32B *15/04, 15/00*

U.S. Cl. 428—698 **7 Claims**



1. A photomask material comprising a substrate and a mask layer provided on said substrate, said mask layer consisting of a layer containing a lower metal oxide, a lower metal nitride or a combination of said lower metal oxide and said lower metal nitride, and a layer containing a mixture of a higher metal oxide and a higher metal nitride of the same metal or a layer containing a higher metal nitride of the same metal.

4,497,879

ELECTROCHEMICAL STORAGE CELL

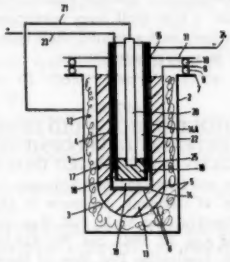
Hans-Hermann Lücke, Walldorf, and Jens-Christian Jessen, Eppelheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Manheim, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,332

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220903; Jun. 16, 1982, 3222525

Int. Cl.³ H01M *10/39, 10/50*

U.S. Cl. 429—62 3 Claims



1. Electrochemical storage cell of the alkali metal and chalcogen type with an anode chamber and a cathode chamber, each chamber provided with a current collector, the two chambers separated from each other by an alkali-ion-conducting solid electrolyte as well as bounded at least in some areas by a metallic housing, two electric terminals, one of said two electric current collectors is shaped as a tube closed at one end with its closed end in the interior of the cup-shaped solid electrolyte, a second electrically conducting tube is arranged within said tube, an electrically conducting plug of a fusible alloy closes off the lower end of the second tube which is spaced a pre-settable distance from the closed end of the first tube to provide a space between the ends of the first and second tubes related to the size of the plug that the melted plug will fill the space with only the two tubes connected via the alloy in an electrically conducting manner, an insulating material is arranged between the inside surfaces of the first tube and the outside surfaces of the second tube in its upper part, a cylindrical conducting rod is arranged within the second tube, said rod having its lower end disposed in a recess of the plug closing-off the second tube and is connected to the latter in an electrically conducting manner, insulating material is arranged between the rod and the second tube, the rod is connected in an electrically conducting manner to the metallic housing of the storage cell, and one of said two electric terminals of the storage cell is formed by the second tube, and the other electric terminal is the first tube.

4,497,880

RECOMBINATION DEVICE FOR STORAGE BATTERIES

Helmut Kraft, Liederbach, and Konstantin Ledjeff, Bad Krozingen, both of Fed. Rep. of Germany, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,386

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218016

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—86 5 Claims

1. A gas recombination device connected to receive gas discharge including hydrogen, oxygen and metal hydrides from a storage battery, said device comprising,

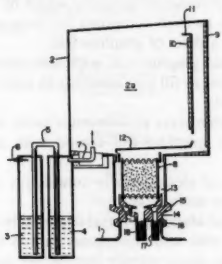
interconnection means for gas flow between the storage battery and the recombination device;

means for absorbing metal hydrides from the gas discharge flow communicating with the interconnection means;

catalytic means supported within the recombination device for recombining hydrogen with oxygen gas to form water;

a gas-tight enclosure containing the catalytic means in gas flow communicating with the storage battery; and

a liquid level seal and pressure difference limiting means connected to the interior of the gas-tight enclosure, the seal means including a first vertical, partially liquid-filled chamber, the first chamber connected in gas flow communication with the gas-tight enclosure, a second vertical,



partially liquid-filled chamber, said second chamber is open at its upper portion to the atmosphere outside the gas-tight enclosure, an inverted U-shaped overflow tube disposed with its open end portions near the bottom portions respectively of the first and of the second partially liquid-filled chambers wherein the pressure within the gas-tight enclosure is limited in respect to the outside atmospheric pressure by the level of liquid in said chambers.

4,497,881

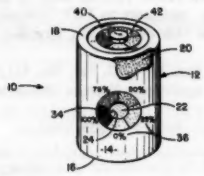
BATTERY CHARGE INDICATOR

Renee Z. Bertolino, 1648 Spruce St., S. Pasadena, Calif. 91030

Filed Jan. 31, 1983, Ser. No. 462,264

Int. Cl.³ H01M *10/48*

U.S. Cl. 429—91 12 Claims



1. An improved electrical storage cell for generating electrical charge in response to a chemical reaction comprising:

a housing having a side region and two end regions;

a charge producing compound in the housing, the charge producing compound being free of charge indicating additives, but itself changing color as the cell charge is depleted;

window means in the housing whereby the charge producing compound can be viewed by a user, the remaining charge of the storage cell being indicated by the color of the charge Producing compound.

4,497,882

METHOD OF PREPARING AN ARTICLE WHICH IS RESISTANT TO CORROSIVE ATTACK BY MOLTEN POLYSULFIDE SALTS

Mati Mikkor, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 6, 1984, Ser. No. 577,471
Int. Cl.³ H01M 2/02
U.S. Cl. 429—163 16 Claims

1. A method of preparing an article which is electronically conductive and resistant to corrosive attack by molten polysulfide salts, which method comprises the steps of:

(a) providing a sheet of graphite foil;

(b) coating said graphite foil with amorphous pyrolytic or glassy carbon to fill any openings in and/or through said graphite foil;

(c) coating a thin layer of aluminum metal onto at least one side of said graphite foil coated with said amorphous carbon;

(d) providing an electronically conductive material having an aluminum surface; and

(e) bonding said aluminum metal coated side of said graphite foil coated with said amorphous carbon to an aluminum surface of an electronically conductive material, thereby to form an electronically conductive article resistant to corrosive attack by molten polysulfide salts.

4,497,883

BATTERY HAVING CATHODE OF SHEET LOADED WITH GRAPHITE AND CARBON SHEET ANODE

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,872
Int. Cl.³ H01M 10/40
U.S. Cl. 429—194 10 Claims

1. An apparatus which is capable of being electrically charged to obtain a rechargeable battery, said apparatus comprising a conductive sheet containing particles of graphite, a conductive sheet containing high surface area carbon, and an electrolyte comprising a metal salt and a non-aqueous solvent; in which said graphite containing sheet is the cathode and said high surface area carbon is the anode in the battery in its charged state.

4,497,884

METHOD FOR THE PRODUCTION OF A SELF-SUPPORTING MASK

Frank Schmidt, and Horst Tyrroff, both of Dresden, German Democratic Rep., assignors to VEB Zentrum für Forschung Und Technologie Mikroelektronik, Dresden, German Democratic Rep.

Filed Sep. 22, 1982, Ser. No. 421,542
Claims priority, application German Democratic Rep., Oct. 1, 1981, 233773
Int. Cl.³ G03F 9/00
U.S. Cl. 430—5 5 Claims

1. A method for the production of a self-supporting spacing mask for reducing particle radiation-projection systems, comprising depositing a sufficiently finely structured nickel layer galvanically on a support substrate, whereby the structure is produced by means of a pattern and subsequently depositing an insulating layer on at least one auxiliary layer, and transferring the pattern structure onto the insulating layer, and galvanizing and separating the nickel layer system from the substrate and isolating the residual insulating layer so that the produced mask may be clamped into a frame, said pattern for producing the mask being in the form of a nuclear filter, said pattern having statistically distributed pores, the diameter P of which in association with the scale of reduction M of the particle radiation projection system yields a value of P/M=0.05 to 0.2 μm and the mean spacing of which is maximally 0.2 μm.

4,497,885

PRESSURE-FIXABLE MICROCAPSULE TONER

Hisayuki Ushiyama, Hiratsuka; Ichiro Ohsaki, Kawasaki; Masanori Takenouchi, Urawa, and Toshiaki Nakahara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,805
Claims priority, application Japan, Mar. 17, 1983, 58-44651
Int. Cl.³ G03G 9/14
U.S. Cl. 430—106.6 11 Claims

1. A microcapsule toner for pressure fixing, comprising a core material containing a pressure-fixable component and a magnetic material, a first shell layer comprising a formaldehyde copolymer resin and a second shell layer comprising a polymer soluble in an organic solvent.

4,497,886

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER FOR THE REVERSAL DEVELOPMENT OF NEGATIVELY-CHARGED IMAGES

Heinz Herrmann, and Hans-Joachim Schlosser, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,590
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1982, 3231505
Int. Cl.³ G03G 9/12
U.S. Cl. 430—115 5 Claims

1. An electrophotographic liquid developer for the reversal development of negatively charged charge images, comprising an electrically insulating carrier liquid of high electrical resistivity and a low dielectric constant, a pigment or dye, a resinous binder, a charge controller comprising a copolymer of N-vinyl-2-pyrrolidone and a methacrylic acid ester, and a poly-N-vinyl-2-pyrrolidone which has been alkylated with an α-olefin, wherein said alkylated poly-N-vinyl-2-pyrrolidone is present in an amount between 0.005 and 1 percent by weight.

4,497,887

THERMAL DEVELOPMENT TYPE DIAZO COPYING MATERIAL WITH HYDROPHOBIC RESIN ENCAPSULATED COUPLER PARTICLE

Nobuyoshi Watanabe, Numazu, and Tsutomu Matsuda, Sunto, both of Japan, assignors to Ricoh Compay, Ltd., Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,308
Claims priority, application Japan, Jun. 9, 1981, 56-88530
Int. Cl.³ G03C 1/60, 1/58
U.S. Cl. 430—138 12 Claims

1. A thermally developable diazotype copying material comprising a support material and a photosensitive layer formed on said support material, said photosensitive layer consisting essentially of a diazonium compound suitable for use in a two component diazotype copying material, an azo coupling component and a thermo-fusible auxiliary coloring agent wherein said auxiliary coloring agent is at least one member selected from the group consisting of fatty acid amides having the formula

$$RCONH_2$$

wherein R is a saturated or unsaturated aliphatic hydrocarbon group having 5 to 24 carbon atoms, and N-substituted fatty acid amides having the formulas

$$R^1CONHR^2 \text{ and}$$

$$R^3NHCOR^4$$

wherein R^1 and R^3 each is a saturated or unsaturated aliphatic hydrocarbon group having 5 to 24 carbon atoms, and R^2 and R^4 each is alkyl having 1 to 5 carbon atoms, phenyl, substituted phenyl, cyclohexyl or substituted cyclohexyl, and wherein said coupling component is in the form of coupler particles encap-

sulated with a hydrophobic polymeric material to form capsules, said polymeric material having a softening point in the range of from 50° to 150° C. and being selected from the group consisting of hydrophobic polyester resins, hydrophobic cellulose resins, hydrophobic polyamide resins and hydrophobic polyurethane resins.

4,497,888

LIGHT-SENSITIVE O-QUINONEDIAZIDE PRINTING PLATE WITH OXONOL DYE

Akira Nishioka, Shizuoka; Yoshimasa Aotani, Kanagawa, and Kotaro Yamasue, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1983, Ser. No. 506,268

Claims priority, application Japan, Jun. 23, 1982, 57-107996

Int. Cl.³ G03C *1/60, 1/94;* **G03F** *7/08*

U.S. Cl. 430—165 **6 Claims**

1. In a light-sensitive printing plate precursor capable of forming a positive working lithographic printing plate having high color stain resistance and high image contrast, comprising:

an aluminum support base having a grained and anodized surface; and

a positive working light-sensitive composition comprising an o-quinonediazide compound in admixture with a dye provided on said surface, said o-quinonediazide compound being present in an amount of 10 to 50 wt % based on the total weight of said composition;

the improvement is characterized in that said dye comprises an oxonol dye, which provides the stain resistance and the contrast upon light image exposure and development, present in an amount of 0.3 to 15 wt % based on the total weight of said composition.

4,497,889

RELEASE COMPOUND IN NEGATIVE ACTING PHOTOPOLYMERIZABLE ELEMENT

Stephen J. Fuerniss, Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 358,702, Mar. 16, 1972, abandoned. This application Oct. 24, 1983, Ser. No. 544,036

Int. Cl.³ G03C *1/90, 1/68*

U.S. Cl. 430—260 **9 Claims**

1. In a solvent-developable negative acting radiation sensitive photopolymerizable element comprising a support bearing a layer of negative acting photopolymerizable composition, useful in making printed circuits, and a cover sheet, said composition comprising:

(a) at least one addition polymerizable ethylenically unsaturated compound having a boiling point above 100° C. at normal pressure;

(b) an organic free radical-generating addition polymerization initiator activatable by actinic radiation in the ultraviolet-to-visible region of the spectrum and

(c) a macromolecular organic polymeric binder, the improvement rendering the composition readily releasable from the cover sheet which comprises a release compound or mixture of the formula A-B wherein

A is substituted or unsubstituted alkyl or alkenyl of 6 to 24 carbon atoms, and

B is selected from the group consisting of an unsubstituted 5 or 6 atom aromatic or nonaromatic heterocyclic radical containing 2 or 3 heteroatoms taken from N, O, S or combination thereof, a hetercyclic radical having as the sole heterocyclic nucleus a 5 or 6 atom aromatic or nonaromatic heterocyclic nucleus containing 2 or 3 heteratoms taken from N,O,S or combination thereof, said nucleus substituted with a six carbon fused aromatic ring containing no substituents other than hydrogen,

an alkali metal salt of a β amino carboxylic acid or a bis alkali metal salt of a β, β' amino dicarboxylic acid, wherein said release compound or mixture is present in said negative acting photopolymerizable composition in an effective amount sufficient to lower peel force to a value not greater than 75 grams.

4,497,890

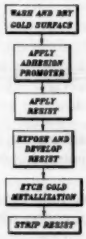
PROCESS FOR IMPROVING ADHESION OF RESIST TO GOLD

John N. Helbert, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 8, 1983, Ser. No. 483,088

Int. Cl.³ H01L *21/312*

U.S. Cl. 430—296 **8 Claims**



1. A process for increasing the adhesion of a polymeric resist to a gold metallization surface which comprises the steps of:

applying to the gold metallization surface a layer of chelating silane; and

applying the polymeric resist to the layer of chelating silane.

4,497,891

DRY-DEVELOPED, NEGATIVE WORKING ELECTRON RESIST SYSTEM

Leon H. Kaplan, Yorktown Heights, and Richard D. Kaplan, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1983, Ser. No. 545,032

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—296 **4 Claims**

1. A process for producing a resist pattern, said process being characterized by the steps of:

(1) coating a substrate with a resist comprising from 70 to 50% by weight of novolac resin and from 30 to 50% by weight of a poly(ether pentene sulfone);

(2) pattern-wise exposing said resist to an electron beam;

(3) baking said resist, and

(4) dry developing the system by exposure to oxygen plasma operating in a directional mode.

4,497,892

METHOD FOR FORMING MULTIPLE IMAGES ON A PHOTOGRAPHIC FILM

Jeff L. Anderson, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 13, 1983, Ser. No. 503,446

Int. Cl.³ G03B *21/14*

U.S. Cl. 430—347 **5 Claims**

1. A method for displaying a plurality of photographic images comprising the steps of:

heating a sheet of dielectric material to an electret forming temperature;

applying an electrical potential to the heated dielectric material in a first direction along one surface of the material establishing a plane of polarization in the material corresponding to said first direction;

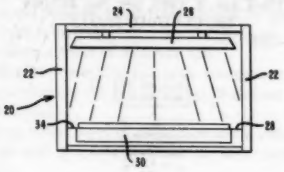
rotating the material 90°;

positioning an image-bearing mask on the dielectric material to form a first image on a first portion of the dielectric

material and a second image on the remaining portion of the dielectric material;

heating the first portion of the dielectric material to an electret-forming temperature;

applying an electrical potential to the first portion of the heated dielectric material in a second direction which is at an angle to the plane of polarization of the remaining portion of the dielectric material establishing a plane of



polarization along said one surface of the material in the first portion of the material corresponding to said second direction;

and applying a polarized light having a plane of polarization which extends in a direction which corresponds to either of the planes of polarization of the first or remaining portion of the sheet of material for projecting either the first image or the second image onto a receiving surface.

4,497,893

SILVER HALIDE COLOR REVERSAL PHOTOGRAPHIC MATERIAL

Naoyasu Deguchi; Koji Kameyama, and Taku Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1984, Ser. No. 575,601

Claims priority, application Japan, Jan. 31, 1983, 58-14304

Int. Cl.³ G03C *7/00, 1/76*

U.S. Cl. 430—359 **19 Claims**

1. A silver halide color reversal photographic material which comprises a support having on the one side thereof a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, and on the other side thereof a gelatin-containing backing layer, said backing layer containing a gelatin of an isoelectric point of 5.5 or more and further containing a cationic polymer.

4,497,894

COLORED SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Akira Itoh, and Akira Takemura, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

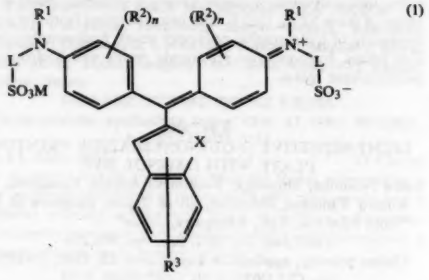
Filed Sep. 19, 1983, Ser. No. 533,818

Claims priority, application Japan, Sep. 22, 1982, 57-166353

Int. Cl.³ G03C *1/84, 1/16*

U.S. Cl. 430—522 **6 Claims**

1. A silver halide photographic photosensitive material which comprises a support, a silver halide emulsion layer and a protective colloid layer, at least one of the emulsion layer and the colloid layer containing a dye represented by the following formula:



(1)

(wherein R^1 represents hydrogen atom, an alkyl group, an aryl group or an alkenyl group; R^2 represents an alkyl group, an alkoxy group, an aryloxy group, an alkenyl group, a halogen atom; n is 0, 1 or 2; R^3 represents hydrogen atom, an alkyl group, an alkenyl group, a halogen atom, nitro group, cyano group, SO_2R^4 or COR^4 wherein R^4 is hydroxyl group, an alkyl group or an aryl group; L represents an alkylene group; M represents hydrogen atom or other inorganic or organic cation; and X represents oxygen atom or sulfur atom).

4,497,895

METHOD FOR PREPARING SILVER HALIDE PHOTOGRAPHIC EMULSION

Syoji Matsuzaka; Takeo Koitabashi; Yoshihiro Haga; Akio Suzuki, and Hiroaki Shiozawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,479

Claims priority, application Japan, Aug. 7, 1981, 56-123070

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—569 **12 Claims**

1. In a method for preparing a silver halide photographic emulsion by a double-jet process using an ammoniacal silver nitrate solution which forms silver halide, the improvement comprising maintaining the ratio between the maximum and minimum solubility of the silver halide in said silver halide photographic emulsion within the range of up to 3.0 after 1/10 of the total amount of the solution containing silver halide has been used in the process, wherein the solubility of the silver halide is maintained within the range of 1×10^{-3} to 1×10^{-6} mole/l.

4,497,896

FERMENTATION OF GLUCOSE WITH RECYCLE OF NON-FERMENTED COMPONENTS

Per G. Assarsson, Toronto, and Joseph H. Nagasuye, Mississauga, both of Canada, assignors to St. Lawrence Technologies Limited, East Mississauga, Canada

Filed Jul. 19, 1982, Ser. No. 399,228

Int. Cl.³ C12P *7/06, 7/10*

U.S. Cl. 435—161 **7 Claims**

1. A process for producing ethanol which comprises:

(a) continuously moving a slurry of carbohydrate material through a confined tubular preheat zone and transferring sufficient heat to the slurry whereby it passes through a gelation stage and forms into a hot free flowing liquid and immediately forcing said hot liquid through a restrictive opening and into a confined tubular reaction zone accompanied by a sudden decrease in pressure at a rate so that the carbohydrate material is made highly reactive and continuously moving the highly reactive carbohydrate material, together with an acid hydrolyzing agent, through the tubular reaction zone as a single hydrolysis stage to produce a hydrolyzate in fluid form containing at least 85% glucose,

(b) fermenting the glucose-containing fluid to form a fermentation product containing ethanol,
(c) distilling the fermentation product to separate ethanol from a distillation residue containing non-fermented carbohydrate materials and
(d) passing at least part of the obtained distillation residue containing non-fermented carbohydrate materials through the single hydrolysis state (a) whereby a portion of said non-fermented materials is hydrolyzed to a fermentable glucose-containing liquid.

4,497,897

LIQUID PROTEINASE CONCENTRATE AND METHOD FOR PREPARATION

Jens H. Eilertsen, Virum; Arne D. Fog, Ballerup, and Keith Gibson, Hvidovre, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Dec. 9, 1982, Ser. No. 448,374
Int. Cl.[3] C12N 9/96; C11D 7/42
U.S. Cl. 435—188 **7 Claims**

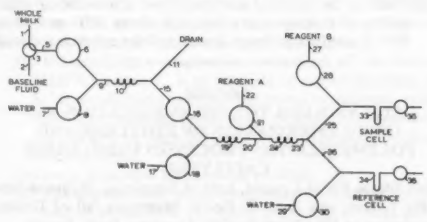
1. A liquid enzyme concentrate comprising:
the proteinase from Subtilisin Carlsberg in concentration of from 0.5–6.5 Anson Units per gram of concentrate;
propylene glycol in an amount of 60–85% and water in an amount of 10–35% by wt.;
calcium ion in concentration of about 0.04–0.5% by wt.;
a water soluble carboxylate in concentration of 0.1–1.0 mol/kg selected from the group consisting of formate, acetate, propionate and mixtures thereof, the pH being in the range of 5–8.

4,497,898

SPECTROPHOTOMETRIC METHOD FOR SIMULTANEOUSLY ANALYZING PROTEIN AND FAT CONTENTS IN MILK

Maynard E. Anderson, Hallsville; Robert T. Marshall, Columbia, and Mark M. Hulse, Fulton, all of Mo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 25, 1982, Ser. No. 411,196
Int. Cl.[3] G01N 33/04, 33/06
U.S. Cl. 436—23 **3 Claims**



1. A method for the simultaneous determination of both the protein and fat contents of milk, said method comprising the steps of:
a. providing a homogeneous dilute milk sample;
b. dividing said sample into a sample stream and a reference stream;
c. adding a color-developing reagent to said sample stream and reacting said reagent with the milk protein in said sample stream to impart a color thereto, wherein the intensity of said color is a function of the milk protein concentration;
d. adjusting the solids concentration in said reference stream to correspond to that in the reagent-containing sample stream by dilution with an appropriate amount of water;
e. simultaneously passing first and second light beams from a common source through said sample and reference streams, respectively, wherein said beams have a wavelength absorbable by the color imparted to said sample stream;
f. continuously monitoring the intensity of said common light source by passing a third light beam from said source through a path of nonfluctuable transmissibility to a third detector;
g. providing a nonturbid, protein-free fluid as a baseline fluid;
h. dividing said baseline fluid into a first baseline stream having added thereto an amount of color-developing reagent equivalent to that added to the sample stream and a second baseline stream having added thereto an amount of water equivalent to that added to the reference stream;
i. comparing the relative transmittance of said first and second beams at the time they are passed through said sample and reference streams to the relative transmittance of said first and second beams at the time they are simultaneously passed through said first and second baseline streams, and computing the protein content as a function of the ratio of said relative transmittances;
j. comparing the relative transmittance of said second and third beams at the time said second beam is passing through said reference stream to the relative transmittance of said second and third beams at the time said second beam is passing through said second baseline stream, and computing the fat content as a function of the ratio of said relative transmittances.

4,497,899

IMMUNOASSAY FOR *CHLAMYDIA TRACHOMATIS* ANTIGENS

Alan S. Armstrong, Waukegan; John E. Herrmann, Hawthorn Woods, and Lawrence V. Howard, Vernon Hills, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 367,697, Apr. 12, 1982, abandoned. This application Mar. 28, 1983, Ser. No. 479,414
Int. Cl.[3] G01N 33/54, 33/56
U.S. Cl. 436—510 **14 Claims**

1. A method for determining *Chlamydia trachomatis* antigen in a clinical specimen comprising:
(a) lysing *Chlamydia trachomatis* cells in the specimen to release *Chlamydia trachomatis* antigen;
(b) coating a bare solid support with *Chlamydia trachomatis* antigen in the specimen;
(c) separating the antigen coated solid support from the specimen;
(d) treating the antigen coated solid support with chlamydial antibody to form an antigen-chlamydial antibody complex on the solid support;
(e) separating the antigen-chlamydial antibody complex from unbound chlamydial antibody;
(f) treating the antigen-chlamydial antibody complex with a labeled antiglobulin to form an antigen-chlamydial antibody-labeled antiglobulin complex on the solid support;
(g) separating the antigen-chlamydial antibody-labeled antiglobulin complex from unbound labeled antiglobulin; and
(h) determining the labeled antiglobulin bound to the antigen-chlamydial antibody complex as a measure of the *Chlamydia trachomatis* antigen in the specimen.

4,497,900

IMMUNOASSAY FOR *NEISSERIA GONORRHOEAE* ANTIGENS

Dinah Abram, Highland Park; Alan S. Armstrong, Waukegan; John E. Herrmann, Hawthorn Woods, and Chung-Mei Ling, Chicago, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 367,698, Apr. 12, 1982, abandoned. This application Mar. 28, 1983, Ser. No. 479,413

Int. Cl.³ G01N *33/54, 33/56*

U.S. Cl. 436—511 **15 Claims**

1. A method for determining *Neisseria gonorrhoeae* antigen in a clinical specimen comprising:

(a) lysing *Neisseria gonorrhoeae* cells in the specimen to release *Neisseria gonorrhoeae* antigen;

(b) coating a bare solid support with the *Neisseria gonorrhoeae* antigen;

(c) separating the antigen coated solid support from the specimen;

(d) treating the antigen coated solid support with gonococcal antibody to form antigen-gonococcal antibody complex on the solid support;

(e) separating the antigen-gonococcal antibody complex from unbound gonococcal antibody;

(f) treating the antigen-gonococcal antibody complex with labeled antiglobulin, to form an antigen-gonococcal antibody-labeled antiglobulin complex on the solid support;

(g) separating the antigen-gonococcal antibody-labeled antiglobulin complex from unbound labeled antiglobulin; and

(h) determining the labeled antiglobulin bound to the antigen-gonococcal antibody complex as a measure of the *Neisseria gonorrhoeae* antigen in the specimen.

4,497,901

FORSTERITE-CARBON REFRACTORY

Yuzo Ohtsuki; Nobiru Komatsu, both of Tokai; Akira Watanabe, and Gouji Saeki, both of Okayama, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Kyushu Refractories Co., Ltd., Okayama, both of, Japan

Filed Jan. 6, 1983, Ser. No. 456,291

Int. Cl.³ C04B *35/56*

U.S. Cl. 501—90 **2 Claims**

1. Forsterite-carbon refractory which consists essentially of 5–50 weight % forsterite material, 5–30 weight % carbonaceous material, 0.5–10 weight % silicon carbide, and magnesia refractory material.

4,497,902

COMPOSITION FOR REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Naperville; Eugene H. Hirschberg, Park Forest, and Frank S. Modica, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 29,264, Apr. 11, 1979, abandoned. This application Sep. 27, 1983, Ser. No. 536,246

Int. Cl.³ B01J *29/06, 21/10, 23/10*

U.S. Cl. 502—65 **20 Claims**

1. A particulate solid comprising an inorganic oxide composition in association with at least one free or combined rare earth metal selected from the group consisting of lanthanum, cerium, praseodymium, samarium and dysprosium, wherein said inorganic oxide composition comprises at least one member selected from the group consisting of $MgAl_2O_4$ and mixtures of alumina with magnesium oxide and the ratio by weight of inorganic oxide composition to rare earth metal or metals is from about 1.0 to about 1,000.

9. A composition of matter comprising a particulate physical mixture of:

(a) a particulate solid cracking catalyst for cracking hydrocarbons comprising a crystalline aluminosilicate zeolite distributed throughout a porous matrix; and

(b) a particulate solid other than said cracking catalyst comprising an inorganic oxide composition in association with at least one free or combined rare earth metal selected from the group consisting of lanthanum, cerium, praseodymium, samarium and dysprosium, wherein said inorganic oxide composition comprises at least one member selected from the group consisting of $MgAl_2O_4$ and mixtures of alumina with magnesium oxide, the particulate solid other than cracking catalyst contains at least about 40 weight percent of said inorganic oxide composition, the ratio by weight of inorganic oxide composition to rare earth metal or metals is from about 1.0 to about 1,000, and said particulate solid other than cracking catalyst comprises from about 0.1 to about 50 weight percent of said particulate physical mixture.

4,497,903

ACTIVATED COBALT-SUBSTITUTED LAYERED ALUMINOSILICATE FOR SYNTHESIS GAS CONVERSION

Charles L. Kibby, Gibsonia, and Thaddeus P. Kobylinski, Prospect, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 17, 1982, Ser. No. 451,612

Int. Cl.³ B01J *21/12, 21/16*

U.S. Cl. 502—85 **5 Claims**

1. A synthesis gas conversion catalyst obtainable by the multi-stage activation of a layered aluminosilicate having cobalt incorporated into the crystal lattice and having the general formula:

$$Al_{4-n-x}CO_{3/2n}O_8(OH,F)_4Si_{8-y}Al_yO_{12}\cdot(3x+y)NH_4^+\cdot zH_2O$$

where n is between about 0.02 and about 4; x is up to about 1; n+x is between about 0.02 and about 4; y is between about 0.05 and about 2; and z is up to about 10; said activation procedure comprising the steps:

(a) heating the layered aluminosilicate in a reducing atmosphere at a temperature between about 500° and about 750° C. until a significant amount of the cobalt is reduced;

(b) heating the reduced aluminosilicate in an oxidizing atmosphere at a temperature between about 100° and about 600° C. until a significant amount of the cobalt is oxidized, and

(c) heating the oxidized aluminosilicate in a reducing atmosphere at a temperature between about 200° and about 500° C. until a significant quantity of the cobalt is reduced.

4,497,904

CATALYSTS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF ETHYLENE AND POLYMERIZATION PROCESSES USING THESE CATALYSTS

Alain Blaya; Pierre Crouzet, both of Martigues; Stylianos Sandis, Lavera, and Jean C. Bailly, Martigues, all of France, assignors to BP Chimie Societe Anonyme, Paris, France

Filed Jun. 16, 1983, Ser. No. 504,985

Claims priority, application France, Jun. 24, 1982, 82 11055; Jun. 24, 1982, 82 11053

Int. Cl.³ C08F *4/02*

U.S. Cl. 502—104 **13 Claims**

1. Catalysts which can be used for the polymerisation and copolymerisation of ethylene, characterised in that they comprise a support essentially based on magnesium chloride, or magnesium chloride and an aluminium chloride derivative, occurring in the form of spheroidal particles having a mean diameter by mass comprised between 10 and 100 microns and a particle size distribution such that the ratio of the mean diameter by mass, Dm, to the mean diameter by number, Dn, is less than or equal to 3.0, on which support there is precipitated a compound of a transition metal of Groups IV, V and VI of the Periodic Table of Elements, known for its catalytic properties in respect of the polymerisation and copolymerisation of ethylene.

7. Catalysts in accordance with claim 1, characterised in that the precipitation of a titanium compound is carried out on the support.

8. Process for the preparation of catalysts defined in claim 7, characterised in that:

the precipitation is achieved by the reaction of reduction of a titanium compound at maximum valency of the formula $Ti(OR_7)_{(4-n)}X_n$ in which R_7 is an alkyl group containing 2 to 6 carbon atoms, X is a chlorine or bromine atom, and n is an integer or fraction from 1 to 4 inclusive, by means of a reducing agent chosen from among the organomagnesium compounds of the formula R_8MgR_9 in which R_8 and R_9 are identical or different alkyl groups containing from 2 to 12 carbon atoms, organo-zinc compounds of the formula $Zn(R_{10})_{(2-y)}X_y$ in which R_{10} is an alkyl group having 2 to 12 carbon atoms, X is chlorine or bromine and y equals 0 or 1 or a fraction less than 1, and organoaluminium compounds of the formula $Al(R_{11})_{(3-x)}X_x$ in which R_{11} is an alkyl group having 2 to 12 carbon atoms, X is chlorine or bromine and x is 0 or an integer or fraction not greater than 2;

the said reaction of reduction is performed in the presence or absence of an electron donor compound chosen from among organic compounds comprising at least one atom of oxygen, sulphur, nitrogen and/or phosphorus;

the relative quantities of the various compounds (support, titanium compound, organo-magnesium or organo-zinc or organo-aluminium compound, electron donor) are, by molar ratios, such that:

support:titanium compound is comprised between 1 and 50,

organo-magnesium or organo-zinc or organo-aluminium compound:titanium compound is less than 3,

electron donor compound:titanium compound is comprised between 0 and 5.

4,497,905
OLEFIN POLYMERIZATION CATALYST COMPOSITIONS AND POLYMERIZATION PROCESS

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,625
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—107 **28 Claims**

1. A method for producing an improved olefin polymerization catalyst component, which method comprises:

(a) halogenating a magnesium compound of the formula MgR'R'' where R' is an alkoxide or aryloxide group and R'' is an alkoxide or aryloxide group or halogen, with a tetravalent titanium halide in the presence of a halohydrocarbon and an electron donor, therein forming a halogenated product;

(b) recovering said halogenated product;

(c) washing said recovered halogenated product with a wash liquid selected from the group consisting of inert hydrocarbon liquids and halohydrocarbons; and

(d) contacting the resulting washed product with thionyl chloride at a temperature of about 40° to about 140° C.

4,497,906
SOLID CATALYST COMPONENT FOR OLEFIN POLYMERIZATION

Katsumi Hanji, Funabashi, and Kiyoshi Kawai, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,674
Claims priority, application Japan, Feb. 16, 1982, 57-24076; Feb. 16, 1982, 57-24077
Int. Cl.³ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—110 **24 Claims**

24. A process for the preparation of a solid catalyst component for olefin polymerization, which comprises reacting (A) a silicon compound selected from the group consisting of (1) halogen-containing silicon compounds, (2) silicon compounds having a monomeric unit

(wherein R^1 and R^2 may be the same or different, R^1 represents an alkyl, aryl, cycloalkyl, alkoxy, or aryloxy group, or a hydrogen atom, and R^2 represents an alkyl, aryl, or cycloalkyl group or a hydrogen atom) and a polymerization degree of 2 to 10,000, (3) silanols of the general formula $R^3_lSi(OH)_{4-l}$ (wherein R^3 represents an alkyl, aryl, or cycloalkyl group or a hydrogen atom, and l is 1, 2 or 3) or condensation products thereof, (4) silicon compounds represented by the general formula $R^4_mSi(OR^5)_{4-m}$ (wherein R^4 represents an alkyl, aryl, cycloalkyl, or alkenyl group or a hydrogen atom, R^5 represents an alkyl or aryl group or a fatty acid moiety, and m is 1, 2 or 3, and (5) silicon compounds or polymers thereof represented by the general formula $[SiO_a(OR^6)_b]_n$ (wherein R^6 presents an alkyl, cycloalkyl, aralkyl, or aryl group or a fatty acid moiety, a and b are each a number defined by the formula $0 \leqq a \leqq 1$ or $2 \leqq b \leqq 4$, and n is an integer of from 1 to 10,000) with

(B) a compound of a transition metal of Groups IVa, Va and VIa of the periodic table to form a reaction mixture (I); then reacting the reaction mixture (I) with

(C) an organomagnesium compound selected from organomagnesium compounds or hydrocarbon-soluble complexes thereof with an organometallic compound capable of solubilizing said organomagnesium compounds, to form an intermediate product (II); and containing the intermediate product (II) with

(D) an organoaluminum halide represented by the general formula $R^7_cAlX_{3-c}$ (wherein R^7 represents an organic group having 1 to 20 carbon atoms, X represents a halogen atom, and c is a number defined by the formula $0<c<3$) to form a hydrocarbon-insoluble product (III) suitable for use as the solid catalyst component.

4,497,907
COPRECIPITATED SI-AL-METAL-PARTICLE CATALYST

Albert P. Halluin, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 16, 1982, Ser. No. 388,967
Int. Cl.³ B01J *37/02, 21/12*
U.S. Cl. 502—235 **34 Claims**

1. A calcined support catalyst comprosed of:

(a) one or more metals which are catalytically active for the hydrogenation of organic compounds,

(b) alumina and silica at a weight ratio of 0.45:1 to 1:0.45 respectively; and

(c) solid porous particles, the catalyst being characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g wherein the total amount of catalytically active metal in the catalyst ranges from about 10 wt.% to about 70 wt.%, and wherein the catalyst has been prepared by; (aa) coprecipitating ions of one or more catalytically active metals, aluminum ions and silicate ions, with the solid porous particles, (bb) drying the coprecipitated catalyst and (cc) calcining the dried coprecipitated catalyst at a temperature from about 300° C. to 450° C.

4,497,908
COPPER-ALKALI METAL-RUTHENIUM/SILICA CATALYST FOR CONVERTING SYNGAS TO LINEAR ALPHA-OLEFINS

Robert M. Lewis, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 23, 1984, Ser. No. 529,673
Int. Cl.³ B01J *21/08, 23/58, 23/72*
U.S. Cl. 502—245 **5 Claims**

1. A copper-alkali metal-ruthenium supported on silica catalyst composition useful for converting syngas to linear alpha-olefins in high yields which catalyst is prepared by a process which comprises:

(a) impregnating a porous silica support with a solution consisting essentially of soluble copper, alkali metal and ruthenium salts,

(b) drying and calcining the impregnated support in an oxidizing or neutral atmosphere at a temperature ranging from about 200° C. to about 800° C., and then

(c) reducing the impregnated support in a reducing atmosphere at a temperature ranging from about 200° C. to about 800° C.

4,497,909
HYDROGENATION PROCESS

Takuji Itoh, and Ikuo Akitsuki, both of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 142,970, Apr. 22, 1980, abandoned, which is a division of Ser. No. 7,140, Jan. 29, 1979, Pat. No. 4,218,308, which is a continuation of Ser. No. 690,265, May 26, 1976, abandoned, which is a division of Ser. No. 607,091, Aug. 22, 1975, abandoned. This application Aug. 6, 1981, Ser. No. 290,629
Claims priority, application Japan, Nov. 25, 1974, 79-135374
Int. Cl.³ B01J *21/12, 23/38*
U.S. Cl. 502—262 **9 Claims**

1. A catalyst comprising a catalytic metal or compound thereof on a porous silica/alumina carrier having a silica content of less than about 40% by weight of the carrier and having a specific surface area of at least about 200 m^2/g and a bulk density of less than about 0.6 g/ml and being further characterized in that:

(a) pores having a diameter smaller than 600 Å occupy at least 90% of the total pore volume; and

(b) pores having a diameter of from 150 to 600 Å occupy at least about 40% of the total volume of the pores having a diameter smaller than 600 Å.

2. The catalyst of claim 1 wherein pores having a diameter of smaller than 600 Å occupy at least 95% of the total pore volume.

3. The catalyst of claim 2 wherein pores having a diameter of from 150 to 600 Å occupy from about 50 to about 80% of the total volume of the pores having a diameter smaller than 600 Å.

4. The catalyst of claim 3 wherein the silica content of the carrier ranges from about 5 to about 40% by weight of the carrier.

5. The catalyst of claim 4 wherein the catalytic metal or compound thereof comprises at least one metal or an oxide of a metal selected from the noble metals of Group VIII of the Periodic Table.

4,497,910
PROCESS FOR METHANE SYNTHESIS BY CATALYTIC REDUCTION OF CARBON MONOXIDE IN AQUEOUS PHASE

Dang V. Quang, Paris; André Sugier, Rueil Malmaison; Dominique Commereuc, Meudon, and Yves Chauvin, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

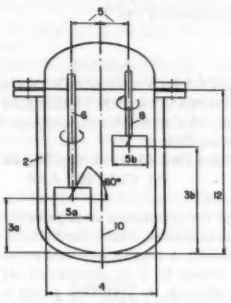
Filed Jul. 28, 1982, Ser. No. 402,673
Claims priority, application France, Jul. 28, 1981, 81 14811; Mar. 25, 1982, 82 05274
Int. Cl.³ C07C *1/04*
U.S. Cl. 518—700 **12 Claims**

1. A process for the catalytic synthesis of methane, comprising the step of contacting a mixture of carbon oxides and hydrogen, in the presence of liquid water, with a catalyst comprising ruthenium deposited on a carrier formed of vegetable charcoal having a surface area of 200–1500 m^2/g or alumina containing 2–50% by weight of silica.

4,497,911
PRODUCTION OF FINE PARTICULATE, EXPANDABLE STYRENE POLYMERS WITH IMPROVED PROPERTIES

Josef K. Rigler, Recklinghausen; Karl Trukenbrod, and Franz-Michael Bollenrath, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,245
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130014; Jan. 3, 1982, 3202159
Int. Cl.³ C08F *12/08, 2/18, 2/44;* **C08J** *9/20*
U.S. Cl. 521—56 **11 Claims**



1. A process for the production of fine particulate, expandable styrene polymers of uniform cell structure in a reactor having a given diameter and a vertical axis of symmetry, consisting essentially of the following sequential steps:

(a) filling said reactor to a height of from 0.5 to less than 1.5 times said reactor diameter with styrene or a mixture thereof with at least one monomer copolymerizable therewith in an aqueous suspension in the presence of monomer-soluble, radical-forming initiators and dispersing agents and producing a top surface of said aqueous suspension in contact with a gas phase;

(b) stirring said aqueous suspension with a stirrer parallel to said axis of symmetry and flow impeding means parallel to said stirrer;

(c) polymerizing said styrene or mixture thereof to a monomer conversion of 70 to 85% of polymer beads with said stirring;

(d) adding 3 to 15% by weight of liquid hydrocarbon expanding agents having 5 or more carbon atoms based on the weight of said styrene or mixture thereof;

(e) vigorously stirring said polymer beads being charged with and during addition of said expanding agents with

the least possible contact in time and space of said polymer beads and with said gas phase and producing a balance of horizontal and vertical mixing with turbulent flow, said top surface of the stirred aqueous suspension having substantially a topology free of a funnel shape; and

(f) completing the polymerization cycle.

4,497,912

FINE PARTICULATE, EXPANDABLE STYRENE POLYMERS SUITABLE FOR THE PRODUCTION OF RAPIDLY MOLD-EJECTED CELLULAR BODIES

Dirk Reese, Marl, and Josef K. Rigler, Recklinghausen, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,270

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325392

Int. Cl.³ C08J *9/20*

U.S. Cl. 521—59 **4 Claims**

1. In the method for producing particulate molding compositions for the production of foamed articles by polymerizing styrene monomer in aqueous suspension under intensive mechanical stirring in the presence of an expanding agent and in the presence of water-insoluble high molecular weight compound which is oluble in the styrene monomer and forms a discontinuous phase with the polymer produced, the improvement comprising as said high molecular weight compound a polyoctenamer having a concentration of 0.01 to 2.0 percent by weight based on the styrene.

4,497,913

PROCESS FOR PREPARING A STABLE DISPERSION OF A POLYMER IN A POLYOL AND ITS USE IN THE PRODUCTION OF HIGH RESILIENCE POLYURETHANE FOAM

Maurice C. Raes, Branford; James M. O'Connor, Clinton, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 31, 1983, Ser. No. 499,651

Int. Cl.³ C08G *18/65, 18/66;* **C08K** *5/05, 5/06*

U.S. Cl. 521—137 **26 Claims**

14. A process for preparing a high resilience polyurethane foam comprising reacting an organic polyisocyanate with a polyol reactant in the presence of a foaming agent and a reaction catalyst, said polyol reactant comprising a stable dispersion of a polymer in a polyol and optionally an additional polyol and containing at least about 60 percent of primary hydroxyl groups, said foam exhibiting a Sag factor in excess of about 2.2, said dispersion being prepared by reacting an organic polyisocyanate with a short-chain polyol in a high molecular weight polyol, wherein:

(a) said short-chain polyol is free of an amine group and has an average molecular weight of about 400 or less and an average functionality of about 2 to about 4 and is selected from the group consisting of low molecular weight diols, polyether diols, triols, tetrols, ester diols, ester triols, ester tetrols, diethoxylated diols, diethoxylated triols, diethoxylated tetrols, triethoxylated diols, triethoxylated triols, triethoxylated tetrols, tetraethoxylated diols, tetraethoxylated triols and tetraethoxylated tetrols;

(b) said high molecular weight polyol is a polyoxyalkylene polyether polyol having an average molecular weight of at least about 1,500, an average functionality of about 2 to about 8 and from about 35 to about 80 percent of primary hydroxyl groups, based on the total number of hydroxyl groups present therein;

(c) the molar ratio of said organic polyisocyanate to said short-chain polyol ranges from about 0.7 to about 1.0;

(d) the organic polyisocyanate/short-chain polyol reaction product constitutes from about 10 to about 30 percent by weight based on the total weight of said organic polyisocyanate, said short-chain polyol and said high molecular weight polyol;

(e) the ratio of the content of primary hydroxyl groups in said short-chain polyol to that in said high molecular weight polyol is defined by the following relationship

$$R = \frac{\Sigma_i (W_{s,i} \times N_{s,i} \times P_{s,i})}{\Sigma_i (W_{H,i} \times N_{H,i} \times P_{H,i})}$$

wherein

$W_{s,i}$ is the weight of each short-chain polyol,

$N_{s,i}$ is the hydroxyl number of each short-chain polyol,

$P_{s,i}$ is the percent of primary hydroxyl groups in each short-chain polyol,

$W_{H,i}$ is the weight of each high molecular weight polyol,

$N_{H,i}$ is the hydroxyl number of each high molecular weight polyol, and

$P_{H,i}$ is the percent of primary hydroxyl groups in each high molecular weight polyol,

said ratio being at least about 3.5; and

(f) said reaction is carried out in the presence of a small proportion of water to reduce the viscosity of said dispersion, said proportion ranging from about 0.1 to about 0.5 percent by weight based on the total weight of said organic polyisocyanate, said short-chain polyol and said high molecular weight polyol.

4,497,914

BREATHABLE OSTOMY GASKET COMPOSITION

Douglas Allen, Jr., Belle Mead, and Eric Flam, East Brunswick, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 398,913

Int. Cl.³ C08L *75/04*

U.S. Cl. 523—105 **12 Claims**

1. A polymeric composition, for providing an elastomeric adhesive, breatheable, cohesive, conformable, body fluid generally non-degradable shaped ostomy gasket for use in adherent contact with the skin, which comprises a product derived from the generally non-aqueous reaction of an organic polyisocyanate, and a polyoxyalkylene polyol moiety comprising a mixture of a major portion of polyol having a diol functionality and a minor portion of polyol of at least triol functionality, and having incorporated into the polyol moiety prior to the generally non-aqueous reaction of the polyisocyanate and the polyol moiety a hydrophilic filler wherein there is provided a polymeric matrix characterized by the physical encapsulation of the hydrophilic filler within the polymeric matrix.

4,497,915

MOLDING COMPOSITIONS CONTAINING TRIKETOIMIDAZOLIDINE PRECONDENSATES, THEIR USE, AND A PROCESS FOR PREPARING A TRIKETOIMIDAZOLIDINE PRECONDENSATE COMPOSITE SUITABLE FOR THIS PURPOSE

Ernst Höroldt, Kelkheim; Kurt Kraft, Weisbaden, and Jürgen Ritz, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,471

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134736

Int. Cl.³ C08K *3/34, 3/10, 3/8*

U.S. Cl. 523—156 **16 Claims**

1. A molding composition comprising

(a) 2,4,5-triketoimidazolidine precondensates having terminal groups selected from oxamide esters groups, urethane groups, isocyanate groups and combinations thereof in the form of an amorphous precondensate as a reactive filler,

(b) a customary filler selected from the group consisting of organic fillers, inorganic fillers and combinations thereof, and

(c) at least one further reactive component of a binder which is a polymerization resin having functional groups.

4,497,916

ADHESIVE COMPOSITION ADAPTED FOR SETTING AT A TIME LATER THAN THE TIME OF APPLICATION

Bernard Cooke, Mullingan, and Peter Wrobel, Dublin, both of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

Filed Aug. 22, 1983, Ser. No. 525,351
Int. Cl.[3] B32B 7/12; F16B 39/00; C09J 5/02; C08K 9/10
U.S. Cl. 523—176 18 Claims

1. A curable composition convertible by heating and subsequent cooling from a storage-stable mobile state to a storage-stable non-mobile state in which state the composition requires a further stimulus to cause it to cure, the composition comprising a mobile slurry adapted for application to a substrate, the slurry having a liquid continuous phase and a solid particulate disperse phase, and in which composition the liquid continuous phase comprises a mixture of conventional adhesive or other curable composition ingredients, and the solid disperse phase comprises an organic substance having the following essential properties:

(a) a melting point or range above ambient temperature;

(b) substantial insolubility in the continuous phase at and below ambient temperature; and

(c) substantial solubility in the continuous phase at temperatures above the melting point, or in and above the melting range,

the proportion of the disperse phase to the continuous phase being such that the solution formed by heating, the composition becomes non-mobile and substantially nontacky on cooling it to ambient temperature.

4,497,917

LATEX COMPOSITION COMPRISING CORE-SHELL POLYMER PARTICLES

Donald A. Upson, Webster, and Diane E. Kestner, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,066
Int. Cl.[3] C08L 23/00, 31/02; C08F 10/00
U.S. Cl. 523—201 10 Claims

1. A latex composition comprising a continuous aqueous phase having dispersed therein core-shell polymer particles characterized in that the core polymer represents 80–95 weight percent of the entire particle and has a glass transition temperature greater than 70° C., and the shell polymer represents 5–20 weight percent of the entire particle and has a glass transition temperature from 25° C. to 60° C.

2. An element comprising a support and a coalesced continuous layer comprising from 80–95 weight percent of a first polymer having a glass transition temperature greater than 70° C. and from 5–20 weight percent of a second polymer having a glass transition temperature from about 25° C. to 60° C.

4,497,918

THIXOTROPIC UNSATURATED POLYESTER COMPOSITIONS AND METHODS

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Borger, Tex.

Continuation of Ser. No. 342,668, Jan. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 212,461, Dec. 3, 1980, abandoned. This application Jul. 18, 1983, Ser. No. 514,848
Int. Cl.[3] C08K 7/00
U.S. Cl. 523—220 16 Claims

1. A thixotropic unsaturated polyester resin, said unsaturated polyester resin being thixotropic by reason of having dispersed therein a thixotropic agent selected from the group consisting of a precipitated silicon dioxide and a mixture of a precipitated silicon dioxide and fumed silica, being the sole thrixotropic agent contained in said polyester resin.

4,497,919

EMULSION POLISH COMPOSITIONS

Stephen I. Varga, Evanston, and Donald P. Mattz, Chicago, both of Ill., assignors to Turtle Wax, Inc., Chicago, Ill.

Filed Sep. 22, 1983, Ser. No. 534,788
Int. Cl.[3] C09G 1/04, 1/08, 1/10, 1/12
U.S. Cl. 524—10 18 Claims

1. A water-in-oil emulsion composition suitable for treating natural and synthetic leather articles comprising:

(a) a wax mixture of about 1 part by weight mineral ester wax having an acid value of about 0 to about 55, about 4 parts by weight partly saponified mineral ester wax having an acid value of about 10 to about 45, about 1.5 parts by weight insect wax having an acid value of about 0.2 to about 24;

(b) a film-forming agent that is a curable material selected from the group consisting of a cyclized rubber, an acrylic ester polymer, a drier-modified alkyl resin, an aminofunctional silicone, and mixtures thereof;

(c) a film-modifying agent that is a surfactant selected from the group consisting of a surface-active aminofunctional silicone resin, a linear arylalkyl modified polydialkyl siloxane, a linear alkylated copolymer of vinylpyrrolidone with a long chain C_{12} to C_{22} alpha olefin, and mixtures thereof;

(d) a nonionic, emulsifying agent having an HLB value of about 10 to about 15 and selected from the group consisting of an oil-soluble polyglycerol ester of a hydrophobic fatty acid capable of forming a water-in-oil emulsion, a water-soluble C_8 to C_{18} alkylphenol ether with ethylene oxide having an average number of ethylene oxide units of about 5 to about 70, and mixtures thereof;

(e) about 0.05 to about 0.15 weight percent of an effective amount of an anionic, water-soluble and hydrocarbon insoluble dispersing agent;

(f) about 0.01 to about 0.5 weight percent of a thickening agent selected from the group consisting of a colloidal alkali metal aluminum silicate, a colloidal alkaline earth metal aluminum silicate, a water-soluble nonionic ester of cellulose, a water-soluble anionic ester of cellulose, a water-soluble nonionic ether of cellulose, a water-soluble anionic ether of cellulose, and mixtures thereof;

(g) about 4 to about 20 weight percent of an organic solvent selected from the group consisting of a liquid aliphatic hydrocarbon, a liquid aromatic hydrocarbon, and an oleoresinous liquid, said solvent having an average kauributanol value about 50, and mixtures thereof;

(h) an effective amount of a preservative; and

(i) about 25 to 75 weight percent of deionized water;

wherein the wax mixture, the film-forming agent, the film-modifying agent and the nonionic emulsifying agent are present in amounts effective to produce a high gloss that is substantially self-polishing.

4,497,920

SYSTEM FOR BONDING ADDITIVES TO RESIN PARTICLES AND RESULTING COMPOSITION

Lowell S. Thomas, and William P. Paige, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 17, 1982, Ser. No. 450,716
Int. Cl.[3] C08L 5/00; C08J 3/20; C08K 5/49
U.S. Cl. 524—57 9 Claims

1. A carbonate polymer composition in the form of an additive concentrate comprising a carbonate polymer carrier resin having dispersed therein a powdered or crystalline additive and a functionally effective amount of a color and heat stable bonding agent comprising a mixture of

(a) an epoxidized vegetable oil or a bis(dioxaphosphorinane), and

(b) an esterified polysaccharide.

4,497,921

SULFUR STABILIZED OXIDIZED POLYOLEFIN AND ASPHALT COMPOSITION

Irving B. Chang, and Robert E. Beckwith, Jr., both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 2, 1983, Ser. No. 528,826
Int. Cl.³ C08L 95/00
U.S. Cl. 524—59 6 Claims

1. A composition comprising asphalt, 1 to 25 weight percent based on the weight of the asphalt of oxidized polyethylene having a Brookfield viscosity at 149° C. of from 100 to 40,000 centipoises, from 0.1 to 10 percent by weight based on the weight of the asphalt of sulfur, 0 to 40 percent by weight based on the weight of the asphalt of an initial viscosity modifier and, 0 to 150 percent by weight based on the weight of the asphalt of a filler.

4,497,922

COMPOSITIONS OF MATERIALS FOR FORMING PROTECTIVE FILM IN SEMICONDUCTOR DEVICE

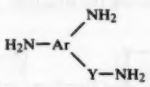
Hidetaka Sato; Shunichiro Uchimura; Isao Uchigasaki, all of Hitachi, and Daisuke Makino, Mito, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,151
Claims priority, application Japan, Jun. 11, 1982, 57-101027
Int. Cl.³ C08K 5/34
U.S. Cl. 524—104 15 Claims

1. A composition of materials for forming a protective film in a semiconductor device, said film preventing soft errors due to α-rays, which comprises:

(i) a polyamide acid-silicone intermediate obtained by reacting

(a) a purified diaminoamide compound of the formula:



wherein Ar is an aromatic residue; Y is SO_2 or CO, and one of amino groups and the Y—NH_2 group are positioned at ortho position each other,

(b) a purified diaminosiloxane,

(c) a purified diamine, and

(d) a purified aromatic tetracarboxylic acid dianhydride, and

(ii) a purified inert solvent.

4,497,923

SHEAR THICKENING OF ORGANIC DILUENTS VIA INTERPOLYMER COMPLEXES

Robert D. Lundberg, Bridgewater; Dennis G. Peiffer, East Brunswick; Ilan Duvdevani, Leonia, and Robert R. Phillips, Spring Lake Heights, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,904
Int. Cl.³ C08J 3/08, 3/10; C08K 5/01, 5/04
U.S. Cl. 524—107 15 Claims

1. A process for forming a shear thickening organic liquid having a viscosity of at least about 10 cps which includes the steps:

(a) forming a first solution of an organic liquid and a substantially neutralized sulfonated polymer having a sulfonate content of from about 4 to about 200 milliequivalents per 100 grams of said polymer, said sulfonated polymer having a molecular weight of about 1,000 to about 10,000 and having a polymeric backbone selected from the group consisting of polystyrene, poly-t-butylstyrene, ethylene propylene terpolymer, styrenemethylmethacrylate copolymer, polyisobutylene Butyl rubber or polyvinyltoluene, said organic liquid of said first solution being selected form the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, cyclic aliphatic ethers, aliphatic ethers, chlorinated hydrocarbons, organic ketones or organic aliphatic esters and mixtures thereof, the concentration of said neutralized sulfonated polymer in said first solution being about 0.001 to about 5 g/dl;

(b) forming a second solution of an organic liquid and an amine containing polymer which contains basic nitrogen atoms, wherein the basic nitrogen content ranges from about 4 to about 500 milliequivalents per 100 grams of polymer, the concentration of said amine containing polymer in said second solution being about 0.001 to about 5.0 g/dl, said organic liquid of said second solution being selected form the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, cyclic aliphatic ethers, aliphatic ethers, chlorinated hydrocarbons, organic ketones or organic aliphatic esters and mixtures thereof; and

(c) mixing said first and second solutions to form an organic liquid having an interpolymer complex of said neutralized sulfonated polymer and said amine containing polymer dissolved therein, a molar ratio of said neutralized sulfonated polymer to said amine containing polymer being about 0.1 t about 20.0, wherein said complex is present at a level of form 0.01% to about 10% and the viscosity of said solution increases by at least 10% as shear rate increases.

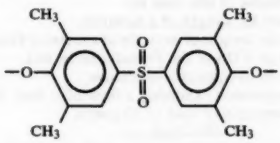
4,497,924

AROMATIC POLYFORMAL BLENDS

Lloyd M. Robeson, Whitehouse Station; James E. Harris, Piscataway, and Louis M. Maresca, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

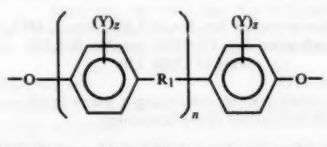
Filed Apr. 18, 1983, Ser. No. 485,949
Int. Cl.³ C08K 5/51
U.S. Cl. 524—151 21 Claims

1. A moldable and compatible blend of 5 to 95 weight percent aromatic polyformal comprising from about 20 weight percent to 100 weight percent of repeating units (I) having the formula



(I)

and from 0 weight percent to about 80 weight percent of repeating units (II) having the formula



(II)

in which the repeating units (I) or the repeating units (I) and the repeating units (II) are connected by interbonding units (III) having the formula

$$—CH_2—$$ (III)

wherein Y is selected from alkyl groups of 1 to 4 carbon atoms, chlorine or bromine, each z, independently, has a value of from 0 to 4 inclusive, n has a value of 0 or 1, and R_1 is a divalent saturated or unsaturated aliphatic hydrocarbon radical, O, CO, SO_2, S or a direct bond, with the proviso that when R_1 is SO_2 then repeating unit (II) is not the same as repeating unit (I), and

95 to 5 weight percent of a styrene copolymer or terpolymer, vinyl chloride containing polymers or mixtures thereof.

11. A blend as defined in claim 1 wherein a triarylphosphate ester is added at a weight percent of 2 to 12.

4,497,925

FLAME RESISTANT THERMOPLASTIC BLENDS OF POLYPHENYLENE OXIDE, POLYOLEFIN AND HYDRATED ALUMINA

Visvaldis Abolins, Delmar, N.Y.; Joseph E. Betts, Westport, Conn., and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 111,961, Jan. 14, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,242

Int. Cl.³ C08L *23/02, 83/04*

U.S. Cl. 524—269 **16 Claims**

1. A thermoplastic (non-thermosetting) composition comprising (a) a normally flammable polyolefin resin and (b) a blend of (i) hydrated alumina, (ii) polydiorganosiloxane and (iii) polyphenylene oxide, said blend being present in an amount effective to improve the flame resistance of the polyolefin resin.

4,497,926

ELASTOMER BASED ADHESIVE COMPOSITIONS

Lester T. Toy, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 335,137, Dec. 28, 1981, abandoned. This application Mar. 6, 1984, Ser. No. 586,638

Int. Cl.³ C08L *93/00;* **C09U** *7/02;* **B32B** *31/00*

U.S. Cl. 524—271 **17 Claims**

1. An adhesive composition consisting essentially of a substantially solvent-free admixture of:

(a) 100 parts by weight of an elastomer selected from the group consisting of polar elastomers and unsaturated elastomers which have at least 5 mole percent unsaturation, said elastomer being a non-crystalline elastomer or an elastomer which has a slow rate of crystallization such that after a time period of at least 100 hours has elapsed following subjecting the elastomer to a temperature of 70° C. for 30 minutes, the elastomer has a room temperature Shore A hardness of less than 60;

(b) 5 to 200 parts by weight of a tackifier;

(c) 0.5–20 parts by weight of an oxide of a metal of Group Ia, IIa, IIb, IVa or VIIb of the Periodic table; and

(d) 0–100 parts by weight of a plasticizer;

said adhesive composition exhibiting a flow of at least 30% at 97° C. under a compressive load of 50 grams.

4,497,927

TIRE TREAD ADHESIVES

Wun T. Tai, Palos Hills, and Kenneth G. Phillips, River Forest, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 415,496, Sep. 7, 1982,. This application Jun. 15, 1984, Ser. No. 621,297

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—475 **12 Claims**

1. A tire tread cement comprising a water-in-oil emulsion having an oil continuous phase containing:

Ingredients	Weight %
(a) Vulcanizable rubber compound	0.5–15.0
(b) Organic hydrocarbon liquid solvent having a B.P. greater than 230° F.	1.0–50.0
(c) Water	20.0–80.0
(d) Surfactant having an HLB between about 3.6–18	0.1–10.0
(e) Tackifier	0.0–10.0
(f) Plasticizer	0.0–10.0

and wherein the hydrocarbon liquid solvent has dissolved therein the vulcanizable rubber compound forming the oil continuous phase.

4,497,928

MOLDABLE POLYBLEND CONTAINING POLY(ARYLENE SULFIDE)

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 25, 1984, Ser. No. 624,306

Int. Cl.³ C08J *5/12;* **C08L** *81/00*

U.S. Cl. 524—502 **12 Claims**

1. A moldable polyblend comprising a physical mixture of from about 99 to about 1% by weight of a poly(arylene sulfide) with from about 1 to about 99% by weight of a copolymer containing recurring units of a vinyl aromatic monomer and recurring units of a maleimide monomer.

4,497,929

LATEX COMPOSITIONS COMPRISING LOADABLE POLYMERIC PARTICLES

James W. Brown, Spencerport; Tsang J. Chen, Rochester, both of N.Y., and Michael A. Schen, Amherst, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

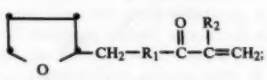
Filed Jul. 19, 1982, Ser. No. 399,404

Int. Cl.³ C08L *41/00, 43/00*

U.S. Cl. 524—547 **15 Claims**

1. A latex composition comprising an aqueous continuous phase having dispersed therein at least 0.5 weight percent of polymer particles characterized in that the polymer is loadable and has recurring units derived from components a, b and c wherein

component a is 30 to 98 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

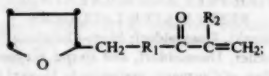
R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

component b is 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

component c is 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

2. A latex composition comprising an aqueous continuous phase having dispersed therein at least 0.5 weight percent of polymer particles characterized in that the polymer is loaded with a hydrophobe and has recurring units derived from components a, b and c wherein

component a is 30 to 95 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

component b is 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

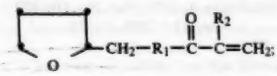
component c is 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

9. A process of preparing a loadable latex composition comprising the steps of:

I. dissolving a polymerization initiator and an emulsifying agent in water

II. mixing

a. 30 to 95 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

b. 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

c. 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

10. A process of preparing a latex composition comprising a loaded polymer, comprising the steps of:

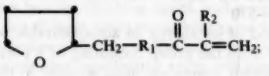
I. preparing a latex composition comprising a loadable polymer;

II. preparing a solution of a hydrophobe dissolved in a water-miscible organic solvent and;

III. gradually adding the latex composition of I to the solution II;

characterized in that the polymer has recurring units derived from components a, b and c wherein:

a. 30 to 95 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

b. 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

c. 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

4,497,930

PROCESS FOR PRODUCING HIGHLY WATER ABSORPTIVE POLYMER

Harumasa Yamasaki; Takatoshi Kobayashi, and Yuzo Sumida, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 527,134

Claims priority, application Japan, Sep. 2, 1982, 57-153097; Jun. 20, 1983, 58-110408; Jun. 20, 1983, 58-110409

Int. Cl.³ C08L *33/00, 33/08*

U.S. Cl. 524—556 **11 Claims**

1. A process for producing a highly water absorbent polymer, which comprises:

polymerizing a hydrophilic, carboxylic acid monomer or salt thereof, which monomer is dissolved in water, to obtain a hydrous hydrophilic polymer;

then dehydrating said hydrous hydrophilic polymer until the water content thereof is from 10 to 40 wt.%, based on the total amount of said hydrous hydrophilic polymer,

then adding to said hydrous hydrophilic polymer an effective amount of a crosslinking agent having at least two functional groups in the molecule, which functional groups are capable of reacting with carboxyl and carboxylate groups, and effecting crosslinking of said hydrous hydrophilic polymer.

4,497,931

ANTIOXIDANTS AND LITHIUM ION

Samuel D. Hollis, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 292,441, Aug. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 183,354, Sep. 2, 1980, Pat. No. 4,284,543. This application Jul. 1, 1983, Ser. No. 509,929

Int. Cl.³ C08K *3/22, 3/26, 5/09, 3/10*

U.S. Cl. 524—570 3 Claims

1. A method of stabilizing an autooxidizable organic polymer selected from the group consisting of a polyolefin and a polyamide, which comprises; incorporating in the polymer a stabilizing proportion of a composition which consists essentially of an antioxidant and an ionic form of lithium, by forming a molten admixture of said polymer, antioxidant and ionic form of lithium.

4,497,932

AQUEOUS DISPERSIONS OF POLYURETHANES FROM OLIGO URETHANES HAVING UNSATURATED TERMINAL GROUPS

Aldo Trovati, Novara, Italy, assignor to RESEM, S.p.A., Milan, Italy

Filed Jun. 30, 1983, Ser. No. 509,654

Claims priority, application Italy, Jul. 1, 1982, 22178 A/82

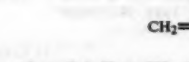
Int. Cl.³ C08L *75/04*

U.S. Cl. 524—591 6 Claims

1. A process for producing stable aqueous dispersions of polyurethanes containing in the macromolecule hydrophile ionic groups, as "internal" surfactants, both of anionic and cationic nature, which are present in quantities equal to 10–60 meq/100 g of dry polyurethane, said process consisting of the following operating steps:

(a) a mixture consisting of a diol containing ionizable groups, i.e. groups which can be turned into hydrophile anionic or cationic groups, and of an essentially linear macroglycol, having a molecular weight ranging between 500 and 5000, of at least one of the polyolpolyether and polyol-polyester types, is reacted at a temperature not higher than 100° C., with an excess of a diisocyanate (—NCO/—OH ratio in equivalents between 1.2 and 2), thereby obtaining a prepolymer containing free isocyanic groups;

(b) the polyisocyanic prepolymer is then converted to an oligourethane containing vinylic unsaturated terminal groups, by reaction with a compound containing hydroxyl radicals, which are reactive towards the isocyanic group, and having the general formula:



where R is H or CH_2, X is a hydroxyalkyl radical;

(c) the obtained oligourethane is subjected to salification treatments in order to convert the ionizable groups into hydrophile cations or anions, respectively of quaternary ammonium kind or of carboxylic, sulphonic, phosphonic group kind;

(d) the oligourethane containing the hydrophile cationic and anionic groups, is subjected to polymerization treatment of the terminal unsaturated groups, in an aqueous dispersion, in the presence of radicalic catalysts at a temperature not higher than 100° C., so as to obtain an aqueous dispersion of polyurethane having a pre-established reticulation degree, that can be regulated by means of a possible addition of comonomers in the polymerization step.

4,497,933

EMULSIFIER-FREE AND SOLVENT-FREE ALKYD RESIN WATER LACQUERS

Manfred Gorzinski, Duesseldorf; Hans-Christoph Wilk, Neuss; Herbert Fischer, Duesseldorf, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,808

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246614

Int. Cl.³ C09D *3/64;* C08G *63/20*

U.S. Cl. 524—604 13 Claims

1. A process for the preparation of an aqueous alkyd resin composition comprising the steps of

(a) reacting together (i) from about 8 to about 16 mole % of at least one straight chain or branched chain fatty acid, (ii) from about 25 to about 45 mole % of at least one dihydroxy compound, and (iii) from about 14 to about 28 mole % of at least one polyhydroxy compound having at least three hydroxy groups, to form a product having an acid number <5;

(b) reacting the product of step (a) with from about 13 to about 25 mole % of at least one dicarboxylic acid or dicarboxylic acid anhydride or short chain esters or semi-esters thereof and from about 8 to about 15 mole % of at least one tricarboxylic acid or tricarboxylic acid anhydride until a product having an acid number of not more than about 40 is obtained; and

(c) dissolving the product from step (b) in water by the addition of a solubilizing quantity of an amino alcohol containing more than 2 hydroxy groups.

4,497,934

METHOD FOR THE PRODUCTION OF MELAMINE/ALDEHYDE FILAMENTS

William E. Streetman, Williamsburg, Va., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 2, 1984, Ser. No. 606,429

Int. Cl.³ C08L *61/28*

U.S. Cl. 525—58 10 Claims

1. A continuous method for the preparation of a melamine-aldehyde filament which comprises:

(a) charging a crystalline melamine compound and a solid aldehyde generating compound into a single pass reactor at a temperature ranging from about 120° C. to about 180° C. for from about 30 seconds to about 5 minutes to form a molten liquid having a melt viscosity ranging from about 1000–5000 poises,

(b) immediately extruding said molten liquid through a spinnerette into a reaction chamber, the first ⅓ of which is maintained at a temperature ranging from about 80°–300° C., the second ⅓ of which is maintained at a temperature ranging from about 150°–400° C. and the third ⅓ of which is maintained at a temperature ranging from about 185°–400° C., in the presence of air, and

(c) recovering the resultant filament.

4,497,935

ELASTOMER TOUGHENED POLYIMIDE ADHESIVES

Anne K. St. Clair, and Terry L. St. Clair, both of Poquoson, Va., assignors to The Unites States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 308,201, Oct. 2, 1981, Pat. No. 4,389,504. This application Jan. 28, 1983, Ser. No. 461,788

Int. Cl.³ C08F *283/04, 283/12;* C08G *77/32*

U.S. Cl. 525—181 10 Claims

1. An improved adhesive composition comprising a rubber toughened addition type polyimide and consisting of a rubber-modified amic acid prepolymer adhesive formed as the reaction product of an aromatic diamine and an aromatic amine-terminated elastomer combined in a solvent or solvent mixture at

room temperature with an aromatic dianhydride reactive endcapping mixture,

said aromatic dianhydride reactive endcapping mixture including one or more dianhydrides selected from the group consisting of:

3,3',4,4'-benzophenone tetracarboxylic acid dianhydride, 4,4'-oxydiphthalic anhydride, 2,2-bis(3-4-dicarboxyphenyl)hexafluoropropane dianhydride, bis(3,4-dicarboxyphenyl)sulfone dianhydride, and bis-4-(3',4'-dicarboxyphenoxy)diphenyl sulfone dianhydride,

and mixed with one or more reactive endcapping agents selected from the group of reactive endcapping agents consisting of:

5-norbornene-2,3'-dicarboxylic anhydride, 4-vinylphthalic anhydride, and 4-ethynylphthalic anhydride.

4,497,936

ELASTOMER-ETHYLENE COPOLYMER HOT MELT SYSTEMS

Jean M. Tancrede, Baton Rouge, La., and Anthony J. Berejka, Huntington, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 11, 1983, Ser. No. 483,492

Int. Cl.³ C08L *33/06, 45/00*

U.S. Cl. 525—222 **6 Claims**

1. An adhesive composition comprising:

(a) an ethylene-vinyl acetate copolymer having a vinyl acetate content of from 10 to 20% by weight and a melt index of from 1500 to 3,500; and,

(b) an olefin elastomer which has a Mooney viscosity of 250° F. of less than about 70 and is present in amount of from 15 to 60 parts by weight per 100 parts by weight of the elastomer and the normally adhesive copolymer together.

4,497,937

POLYMERS CONTAINING ORGANOTIN COMPOUNDS AND PAINT ON THE BASIS THEREOF

Jacob P. van der Klooster, Papendrecht, and Johannes P. M. van Oosterbos, Maassluis, both of Netherlands, assignors to DSM Resins, B.V., Zwolle, Netherlands

Filed Mar. 21, 1983, Ser. No. 477,402

Claims priority, application Netherlands, Mar. 22, 1982, 8201172

Int. Cl.³ G08F *8/42*

U.S. Cl. 525—333.1 **20 Claims**

1. A polymer containing organotin compounds suitable for application as a paint binder, said polymer composed of:

a cyclized rubber polymer having a plurality of pendant phenolate groups of an organotin phenolate, said polymer carbon-carbon bonded to the phenolic residue of said organotin phenolate, said organotin phenolate having the general formula:

$$R_3—Sn—O—Z$$

wherein in said formula R represents a hydrocarbon group containing from 1 to 15 carbon atoms that is bonded directly to the tin (Sn) and Z represents a phenolic compound containing from 6 to 15 carbon atoms.

4,497,938

THERMOSETTING COATING COMPOSITION - V

Panagiotis I. Kordomenos, Mt. Clemens, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 566,066

Int. Cl.³ C08L *63/02, 61/28*

U.S. Cl. 525—514 **20 Claims**

1. An organic solvent based, thermosetting composition comprising:

(A) crosslinkable hydroxy functional epoxy ester resin having a number average molecular weight (Mn) between about 1,000 and about 5,000, said resin being the reaction product of hydroxy functional secondary amine in approximately 1 to 1 molar equivalent ratio with diepoxide comprising the reaction product of diepoxide reactant with dicarboxylic acid reactant; and

(B) polyfunctional, hydroxy-reactive crosslinking agent selected from aminoplast crosslinking agent, blocked polyisocyanate crosslinking agent comprising at least two isocyanate groups blocked by reaction with an active hydrogen bearing blocking agent, and a compatible mixture of any of them, said crosslinking agent being included in an amount such that at the cure temperature of the composition said crosslinking agent will provide between about 0.5 and about 1.6 hydroxy reactive groups per hydroxy group contributed by said epoxy ester resin.

4,497,939

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE WITH MALEIMIDE

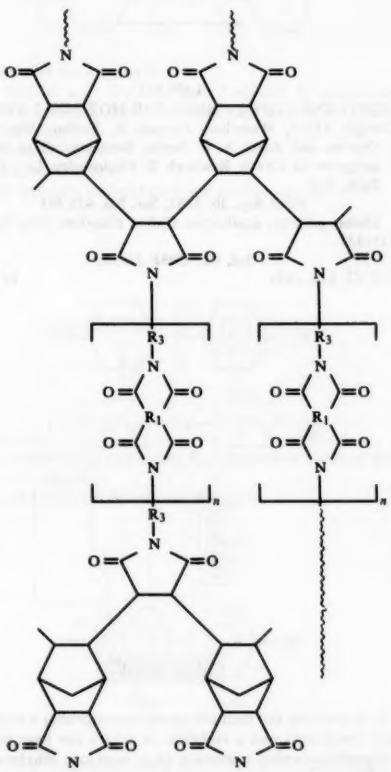
Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983,. This application Dec. 14, 1983, Ser. No. 561,429

Int. Cl.³ C08F *22/40*

U.S. Cl. 526—262 **2 Claims**

1. A composition of the formula:



wherein n is an integer of 1 to 20, made by the process comprising increasing the amount of maleic end-capped prepolymer

reactant relative to the amount of norbornenyl end-capped prepolymer reactant and copolymerizing the reactants at temperatures under 300° C.

4,497,940

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE

Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983,. This application Dec. 14, 1983, Ser. No. 561,435

Int. Cl.³ C08F 22/40

U.S. Cl. 526—262 4 Claims

1. A composition comprising a mixture of a phenyl group containing maleic end-capped prepolymer reactant and a phenyl containing norbornenyl end-capped prepolymer reactant capable of copolymerizing at temperatures below 300° C. wherein at least one phenyl group on at least one member of the group consisting of maleic end-capped prepolymer reactant, norbornenyl end-capped prepolymer reactant, or mixtures thereof has at least one electronegative electron-withdrawing substituent.

4,497,941

ETHYLENE COPOLYMERS FOR HOT MELT SYSTEMS

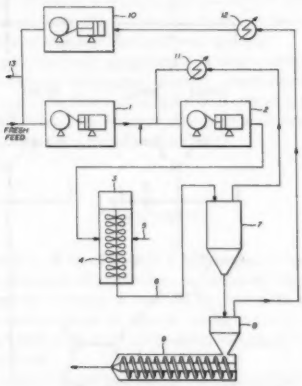
Giorgio Aliani, Waterloo; Jacques B. Lechat, Wezembeek-Oppem, and Jozef A. F. Smits, Berchem, all of Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1982, Ser. No. 429,481

Claims priority, application United Kingdom, Oct. 16, 1981, 8131337

Int. Cl.³ C08F 218/02

U.S. Cl. 526—331 14 Claims



1. A wax-free hot melt composition comprising a base polymer component and a tackifier, in which the base polymer component consists essentially of at least one ethylene-vinyl acetate copolymer having a vinyl acetate content of from 11 to 40% by weight (based on the copolymer) and a melt index of from 700 to 10,000.

4,497,942

PROCESS FOR HYDROLYZING CHLOROSILANES

Yaw D. Yeboah, Schenectady, and Michael P. Venditti, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,262

Int. Cl.³ C08G 77/06

U.S. Cl. 528—12 2 Claims

1. A process which comprises,

(1) introducing organochlorosilane and hydrochloric acid in a proportion of from about 10 to 50 moles of water, per mole of organochlorosilane into a static tubular reactor having elements capable of directing material flow radially towards the reactor wall and back to the elements, where the resulting fluid material is conveyed through the reactor at a rate sufficient to achieve a degree of turbulent mixing capable of substantially converting the organochlorosilane to organopolysiloxane within 60 seconds or less, and where the hydrochloric acid is used at a concentration sufficient to generate anhydrous HCl as a by-product,

(2) recovering the organopolysiloxane and anhydrous HCl from (1).

4,497,943

ORGANOCYCLOPOLYSILOXANE AND A ROOM TEMPERATURE CURABLE COMPOSITION CONTAINING SAME

Toshio Takago; Osamu Sodeyama, and Masami Terashima, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

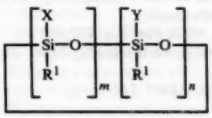
Filed Apr. 21, 1983, Ser. No. 487,203

Claims priority, application Japan, Apr. 26, 1982, 57-69838

Int. Cl.³ C08G 77/06

U.S. Cl. 528—22 17 Claims

1. An organocyclopolysiloxane represented by the general formula



in which

X is an alkenyloxy group of the formula $-OCR^3{=}CH{-}R^2$,

Y is a trimethylsiloxy group of the formula $-O-Si(CH_3)_3$,

R^1 is monovalent hydrocarbon group having from 1 to 8 carbon atoms,

R^2 and R^3 are each independently a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 6 carbon atoms,

m is 2 or 3, and

n is a positive integer with the proviso that

m+n is equal to 4.

4,497,944

PROCESS FOR PRODUCING POLYAMIDE-IMIDE RESIN

Hiroshi Nishizawa, Kitaibaraki, and Yoshiyuki Mukoyama, Hitachi, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,200

Claims priority, application Japan, Nov. 6, 1981, 56-178767

Int. Cl.³ C08G 73/14

U.S. Cl. 528—49 21 Claims

1. A process for producing a polyamide-imide resin which comprises:

reacting an aromatic diisocyanate with a tricarboxylic acid anhydride in approximately equimolar amounts in the

presence of a basic solvent while adjusting the resin content at 40% by weight or more, and

adding at least one compound having one active hydrogen atom selected from the group consisting of a lactam, a lactam and an oxime, and a lactam and an alcohol before, during or after the reaction to adjust the reduced viscosity of the resin to 0.27 or lower.

4,497,945

TOUGH EPOXY POLYMERS FORMABLE BY REACTION INJECTION MOLDING

Robert J. Salloum, Troy, and Richard P. Atkins, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1983, Ser. No. 505,706
Int. Cl.³ C08G *59/42, 59/62;* **C08J** *5/00*
U.S. Cl. 528—94 **5 Claims**

1. A method of forming a tough impact resistant epoxy article by reaction injection molding of an epichlorohydrin-bisphenol A epoxy resin, comprising

prereacting a poly(oxypropylene) diol or triol having a molecular weight of about 1,000 to about 3,000 with a chemical excess of an anhydride curing agent for said epoxy to form a prepolymer in which the original hydroxyl groups of said diol or triol are each capped by reaction with a said anhydride molecule, and thereafter

rapidly mixing said prepolymer with suitable amounts of a said epoxy resin and an imidizole catalyst and adding said mixture to a heated mold to polymerize said mixture and therein form said article.

4,497,946

EPOXY PHOSPHATE-CARBOXYL COPOLYMERS AND AQUEOUS COATINGS CONTAINING THE SAME

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 13, 1983, Ser. No. 484,509
Int. Cl.³ C08G *59/00, 65/28*
U.S. Cl. 528—99 **14 Claims**

1. An epoxy phosphate-carboxyl copolymer substantially free of epoxy functionality and formed by copolymerizing monoethylenically unsaturated monomers, including carboxyl-functional monomer, in an organic solvent solution containing an epoxy-functional epoxy phosphate, there being at least 5% of carboxyl-functional monomer and at least 10% of total monomer present in the copolymer.

4,497,947

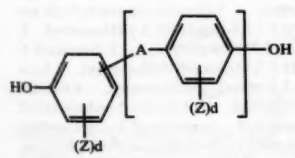
POLYCARBONATE COMPOSITIONS HAVING IMPROVED HEAT DEFLECTION TEMPERATURE

John R. Sanderson, Austin, Tex., and Sivaram Krishnan, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 385,132, Jun. 3, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 557,990
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—174 **6 Claims**

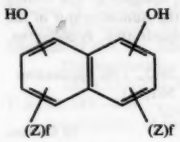
1. An aromatic copolycarbonate molding composition comprising the reaction product of solely

(i) an aromatic diphenol conforming to the structural formulae (1) or (2)



(1)

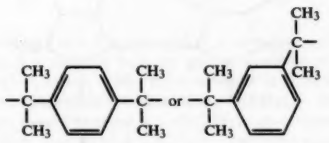
-continued



(2)

wherein

A denotes an alkylene group with 1 to 8 carbon atoms, an alkylidene group with 2 to 8 carbon atoms, a cycloalkylene group with 5 to 15 carbon atoms, a cycloalkylidene group with 5 to 15 carbon atoms, a carbonyl group, an oxygen atom, an —SO— or a radical of the general formula



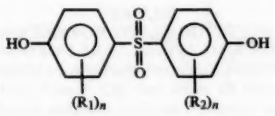
e denotes the number 0 or 1;

Z denotes a C_1–C_4 alkyl and if several Z radicals are substituents in one aryl radical, they may be identical or different;

d denotes 0 to 4;

f denotes 0 to 3;

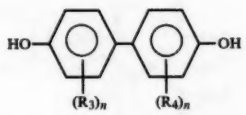
(ii) an aromatic sulfonyl diphenol conforming to



wherein

n denotes 0 to 2 and R_1 and R_2 independently denote H or a C_1–C_4 alkyl;

(iii) a dihydroxybiphenyl conforming to



wherein

R_3 and R_4 independently are H or a C_1–C_4 alkyl and n is 0 to 2;

(iv) a monophenol and

(v) a carbonic acid derivative.

4,497,948

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE WITH MALEIMIDE

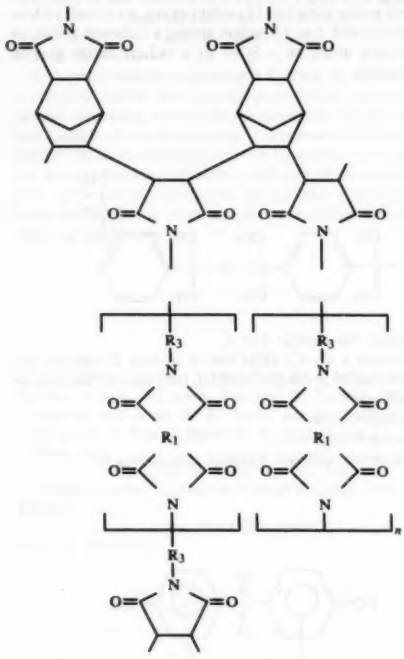
Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983,. This application Dec. 14, 1983, Ser. No. 561,431

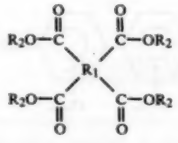
Int. Cl.³ C08G *69/02*

U.S. Cl. 528—342 **10 Claims**

1. A process for the production of a polyimide of the general formula:



wherein R_1 is a tetravalent arene radical and R_3 is a divalent arene radical, comprising the steps of: copolymerizing a maleic end capped prepolymer reactant with a stoichiometric amount of norborneny end-capped prepolymer reactant at temperatures under 300° C. and wherein the prepolymer reactants are generated by heating a solution of solvent and from about 30 percent to about 70 percent by weight of a mixture of compounds of the formulae:

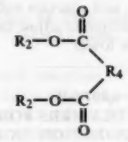


(a)

wherein R_1 is a tetravalent arene radical and at least two of R_2 are alkyl with the remainder being hydrogen:
and

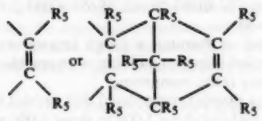
(b) $H_2N—R_3—NH_2$

wherein R_3 is a divalent arene radical: and



(c)

wherein R_2 is defined as in (a) and at least one R_2 in (c) being alkyl, and R_4 is



wherein R_5 is hydrogen or lower alkyl of 1–4 carbons, and wherein the ratio of (a):(b):(c) is n:(n+1):2, wherein n has a value from 1–20, to obtain curable polyimide prepolymers and including the step of promoting Diels-Alder retrogression of the norbornenyl end-capped prepolymer reactant by adding to the norbornenyl reactant a chemical modifier having at least one aromatic ring containing at least one electronegative substituent.

4,497,949

PROCESS FOR THE MANUFACTURE OF CEPHALOSPORIN DERIVATIVES

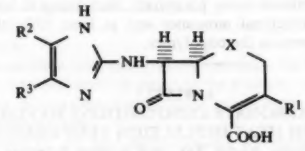
Frank Loftus, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 14, 1982, Ser. No. 388,167

Int. Cl.³ C07D *501/36;* A61K *31/425*

U.S. Cl. 544—27 **5 Claims**

1. A process for the manufacture of a cephalosporin derivative of the Formula I:



I

in which

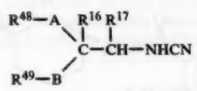
X is sulphur, oxygen or sulphinyl;

R^1 is hydrogen, chlorine, methyl, acetoxymethyl, methoxymethyl, hydroxymethyl, azidomethyl, aminomethyl, benzoyloxy methyl, acetylaminomethyl, carbamoyloxymethyl, 2-(1-methyltetrazol-5-ylthio)-trans-vinyl, 1-methyl-1H-tetrazol-5-ylthiomethyl, 1-carboxymethyl-1H-tetrazol-5-ylthiomethyl, 1-(2-dimethylamino)ethyl-1H-tetrazol 5-ylthiomethyl, 1-sulphomethyl-1H-tetrazol-5-ylthiomethyl, 1-isopropyl-1H-tetrazol-5-ylthiomethyl, 1-(2,2,2-trifluoro)ethyl-1H-tetrazol-5-ylthiomethyl, 1-phenyl-1H-tetrazol-5-ylthiomethyl, 1-(2-methylthio)ethyl-1H-tetrazol-5-ylthiomethyl, 1,3,4-thiadiazol-2-ylthiomethyl, 5-methyl-1,3,4-thiadiazol-2-ylthiomethyl, 1,2,3-thiadiazol-5-ylthiomethyl, 1H-1,2,3-triazol-4-ylthiomethyl, 5-trifluoromethyl-1H-1,2,4-triazol-3-ylthiomethyl, 4,6-dimethylpyrimid-2-ylthiomethyl, 2-thiazolin-2-ylthiomethyl, benzoxazol-2-ylthiomethyl, benzthiazol-2-ylthiomethyl, 2-carboxyphenylthiomethyl, (6-carboxymethyl-7-hydroxypyrrolo[1,2-b]pyridazin-2-yl)thiomethyl, 2-methylthio-

1,3,4-thiadiazol-5-ylthiomethyl, 2-mercapto-1,3,4-thiadiazol-5-ylthiomethyl, 2-acetylamino-1,3,4-thiadiazol-5-ylthiomethyl, 5-methyl-1,2,4-thiadiazol-2-ylthiomethyl, 2-sulphomethyl-1,2,4-oxadiazol-5-ylthiomethyl, 4-methyl-5-(3-carboxypropyl)thiazol-2-ylthiomethyl, 2H-2-methyl-1,2,3-triazol-4-ylthiomethyl, 1H-1,2,4-triazol-2-ylthiomethyl, 4,5-dihydro-6-hydroxy-4-methyl-5-oxo-1,2,4-triazin-3-ylthiomethyl, 2,5-dihydro-6-hydroxy-2-methyl-5-oxo-1,2,4-triazin-3-ylthiomethyl, 1-oxidopyrid-2-ylthiomethyl, imidazo[4,5-b]pyrid-2-ylthiomethyl or imidazo[4,5-d]pyrimidin-2-ylthiomethyl; and

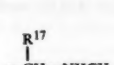
R^2 and R^3 are hydrogen;

which comprises reacting a compound of the formula XXXIII:



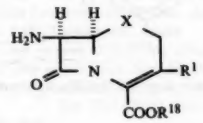
XXXIII

in which R^{16} and R^{17} are hydrogen, A and B are oxygen and R^{48} and R^{49} are joined to form an ethylene or propylene chain which is optionally substituted by one or two 1–6C alkyl radicals or R^{48} and R^{49}, which may be the same or different, are 1–6C alkyl or 1–6C alkanoyl radicals, or R^{48} and R^{49} are joined to form a 1,3,5-trioxane ring which is substituted on the remaining two carbon atoms by radicals of the formula XXXIV:



XXXIV

with a compound of the Formuls X^1:



X^1

in which X and R^1 have the meanings stated above and R^{18} is hydrogen, t-butyl, diphenylmethyl, benzyl, p-nitrobenzyl, p-methoxybenzyl or 2,2,2-trichloroethyl.

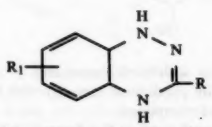
4,497,950

RENZOTRIAZINE COMPOUNDS

Emmett S. McCaskill, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 450,373, Jan. 31, 1983, Pat. No. 4,420,551.
This application Sep. 28, 1983, Ser. No. 536,788
Int. Cl.³ C07D *253/08*
U.S. Cl. 544—183 **2 Claims**

1. A compound represented by the formula



wherein R is, alkoxy having from 1 to 6 carbon atoms or phenyl, R_1 is —COOH, $—NH_2$ or $—NHSO_2R_2$, and R_2 is alkyl having from 1 to 6 carbon atoms.

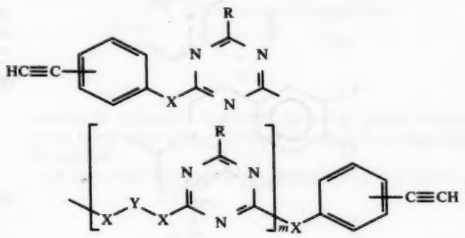
4,497,951

ETHYNYL-PHENYLENE-SUBSTITUTED-1,3,5-TRIAZINE DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

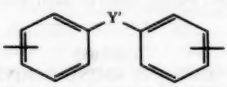
Thomas W. Giants, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 326,792, Dec. 3, 1981, Pat. No. 4,442,278.
This application Apr. 21, 1983, Ser. No. 487,336
Int. Cl.³ C07D *253/04, 403/10, 403/12, 403/14*
U.S. Cl. 544—206 **9 Claims**

1. An oligomer of the formula



where m is zero or 1; R is lower alkyl, lower alkoxy, phenyl, or phenoxy; X is selected from the group consisting of a single bond; —O—; —S—; —N(—R')— where R' is H, lower alkyl, or phenyl; -phenylene-; -biphenylene-; $—(CH_2)_n—$ where n is an integer from 1 to about 4; $—C(C_nH_{2n+1})_2—$ where n is an integer from 1 to about 4; $—C(Ar)_{2—n}$ where n is an integer from 1 to about 4 and Ar is phenyl; Y is



where Y' is selected from the group consisting of a single bond, —C(=O)—, $—S(O_2)—$, —S—, —O—, or $—C(CF_nH_{3-n})_2—$ where n ranges from 0 to 3.

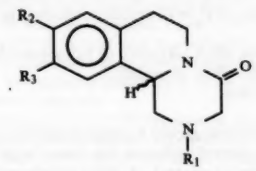
4,497,952

PROCESS FOR THE PRODUCTION OF (±)-4-OXO-1,2,3,6,7,11b-HEXAHYDRO-4H-PYRAZINO[2,1-A]ISOQUINOLINE DERIVATIVES

Choong S. Kim; Nam J. Lee, and Joong H. Kim, all of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jul. 8, 1983, Ser. No. 511,999
Claims priority, application Rep. of Korea, Jul. 8, 1982, 1982-3036; May 30, 1983, 1983-2413
Int. Cl.³ C07D *471/04, 241/08*
U.S. Cl. 544—344 **13 Claims**

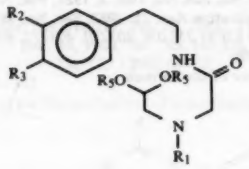
1. A process for the production of (±)-4-oxo-1,2,3,6,7,11b-hexahydro-4H-pyrazino[2,1-a]isoquinolines of formula I:

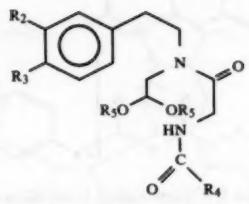


I

which comprises an intramolecular cyclization reaction of a compound of formula II or III, in an acid medium, wherein said acid is at least one member selected from the group con-

sisting of sulfuric acid, hydrochloric acid, phosphoric acid, polyphosphoric acid (PPA), formic acid, acetic acid, trichloroacetic acid, trifluoroacetic acid, methanesulfonic acid, p-toluene-sulfonic acid and boron trifluoride etherate, with or without organic solvent,

II 

III 

wherein R_1 represents hydrogen, a loweralkyl or R_4CO; R_2 and R_3 each independently represent hydrogen, a loweralkyl or alkoxy; R_4 represents hydrogen, a loweralkyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, phenyl or phenyl substituted by one or more of the radicals selected from the group consisting of C_1–C_6 alkyl, halogen, nitro and C_1–C_6 alkoxy, and R_5 represents methyl, ethyl or methylene.

4,497,953

IMIDO, AMIDO AND AMINO DERIVATIVES OF MERCAPTOACYL PROLINES AND PIPECOLIC ACIDS

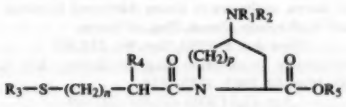
John Krapcho, Somerset, and Peter C. Wade, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 286,921, Jun. 1, 1981, Pat. No. 4,390,695, which is a division of Ser. No. 162,341, Jun. 23, 1980, Pat. No. 4,310,461. This application Jan. 3, 1983, Ser. No. 454,936

Int. Cl.³ C07D *401/04, 403/04*

U.S. Cl. 546—99 **13 Claims**

1. A compound having the formula



wherein R_1 and R_2 together with the nitrogen atom to which they are attached are 2H-isoindol-2-yl-1,3-dione, hexahydro-2H-isoindol-2-yl-1,3-dione, 1,1,3-trioxo-1,2-benzisothiazol-2-(3H)-yl, or 1,3-dihydro-1,3-dioxo-2H-benz[de]isoquinolin-2-yl;

R_3 is hydrogen, alkyl, aryl, arylalkyl, alkanoyl or arylcarbonyl;

R_4 is hydrogen, alkyl, alkylthio, or trifluoromethyl;

R_5 is hydrogen, alkyl, or arylalkyl;

n is 0, 1 or 2; and

p is 1 or 2;

or a non-toxic, physiologically acceptable salt thereof, or symmetrical dimer thereof; wherein the term "aryl" refers to phenyl, 1-napthothyl, 2-naphtyl, or pheny substituted with halogen, alkyl, alkoxy, alkylthio, hydroxy, alkanoyl, nitro, amino, dialkylamino, phenyl or trifluoromethyl groups; the term "alkanoyl" refers to groups having up to 9 carbon atoms; and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,497,954

CYCLOPENTANONE DERIVATIVES

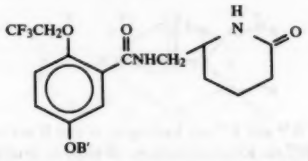
Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 15, 1983, Ser. No. 551,965

Int. Cl.³ C07D *211/76*

U.S. Cl. 546—221 **2 Claims**

1. A process for preparing a compound of the formula

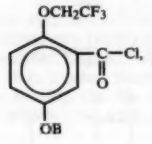
III 

wherein B' is hydrogen or $—CH_2CF_3$, comprising the steps of:

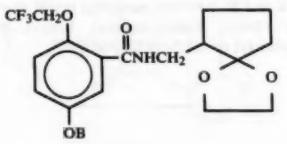
(a) converting 2-oxocyclopentanecarboxylic acid ethylene ketal to 2-oxocyclopentanecarboxamide ethylene ketal;

(b) reducing the product of step (a) to (2-oxocyclopentane)-methylamine ethylene ketal;

(c) reacting the product of step (b) with a reactant of the formula

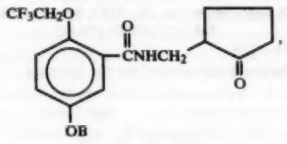


wherein B is benzyl or $—CH_2CF_3$, to provide a product of the formula



wherein B is as defined above;

(d) hydrolyzing the product of step (c) to provide a product of the formula



wherein B is as defined above; and

(e) reacting the product of step (d) with hydrazoic acid to provide said compound;

with the provisos that when B is benzyl, step (e) provides said compound wherein B' is hydrogen, and when B is $—CH_2CF_3$, step (e) provides said compound wherein B' is $—CH_2CF_3$.

4,497,955

PREPARATION OF 2-CHLORO-5-TRICHLOROMETHYL PYRIDINE FROM LOWER CHLORINATED BETA-PICOLINES

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Filed Sep. 24, 1982, Ser. No. 422,755
Int. Cl.[3] C07D *213/61*
U.S. Cl. 546—345 10 Claims

1. The process of producing 2-chloro-5-trichloromethyl pyridine from mixtures containing lower chlorinated beta-picolines selected from the group consisting of 3-trichloromethyl pyridine, 2-chloro-5-dichloromethyl pyridine, and mixtures thereof, said process comprising non-catalytic liquid phase chlorination of such lower chlorinated beta-picolines at a temperature of from about 130° C. to about 160° C. for a time to substantially maximize the 2-chloro-5-trichloromethyl pyridine content of the chlorinated product.

4,497,956

MANUFACTURE OF ANTIBIOTICS

Brian E. Looker, Greenford, England, assignor to Glaxo Group Limited, London, England

Filed Nov. 12, 1982, Ser. No. 441,250
Claims priority, application United Kingdom, Nov. 13, 1981, 8134358
Int. Cl.[3] C07D *277/40*
U.S. Cl. 548—194 5 Claims

1. Crystalline ethyl(Z)-2-(2-t-butoxycarbonylprop-2-oxyimino)-2-(2-triphenylmethylaminothiazol-4-yl)acetate in association with 0.4 to 2 moles of methanol per mole of ester.

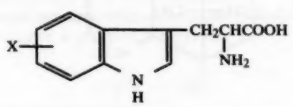
4,497,957

PROCESS FOR PREPARING OPTICALLY ACTIVE TRYPTOPHANS

Mamoru Nakai; Tokio Ohshima; Tomio Kimura; Tetsuo Omata, and Noritada Iwamoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

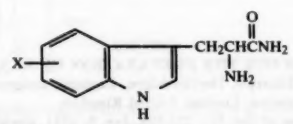
Continuation-in-part of Ser. No. 276,057, Jun. 22, 1981, abandoned. This application Jun. 25, 1982, Ser. No. 391,997
Claims priority, application Japan, Jun. 24, 1980, 55-84618
Int. Cl.[3] C07D *209/20*
U.S. Cl. 548—496 11 Claims

1. A process for preparing optically active L-tryptophans having the formula,



wherein X represents hydrogen, hydroxyl group, halogen atoms, lower alkyl groups or lower alkoxy groups comprising the steps of:

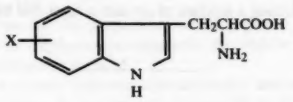
(a) interacting DL-tryptophan amides having the formula,



wherein X is as defined above with (i) a cultivation mixture of a microorganism capable of producing amidase, (ii) a culture broth or cells separated from the cultivation mixture, (iii) the amidase isolated from the culture broth or cells, or (iv) immobilized preparations of the cultivation mixture, the culture broth or cells, or the amidase, said microorganism being selected from the group of genera Trichoderma, Rhodotorula, Nocardia, Mycobacterium, Bacillus, Rhizopus, Candida, Streptomyces, Aerobacter, Pseudomonas, Gibberella, Torulopsis, Enterobacter, and Trichosporon, whereby the asymmetric hydrolysis of L-tryptophan amides is effected; and

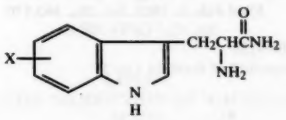
(b) separating the resultant L-tryptophanes from the asymmetrically hydrolyzed mixture.

5. A process for preparing optically active D-tryptophans having the formula,



wherein X represents hydrogen, hydroxyl group, halogen atoms, lower alkyl groups or lower alkoxy groups comprising the steps of:

(a) interacting DL-tryptophan amides having the formula,



wherein X is as defined above with (i) a cultivation mixture of a microorganism capable of producing amidase, (ii) a culture broth or cells separated from the cultivation mixture, (iii) the amidase isolated from the culture broth or cells, or (iv) immobilized preparations of the cultivation mixture, the culture broth or cells, or the amidase, said microorganism being selected from the group of genera Trichoderma, Rhodotorula, Nocardia, Mycobacterium, Bacillus, Rhizopus, Candida, Streptomyces, Aerobacter, Pseudomonas, Gibberella, Torulopsis, Enterobacter, and Trichosporon, whereby the asymmetric hydrolysis of L-tryptophan amides is effected;

(b) separating the resultant L-tryptophans obtained from the asymmetric hydrolysis of L-tryptophan amides, and;

(c) hydrolyzing the resultant D-tryptophan amides.

4,497,958

PROCESS FOR OXIDIZING A CARBOXYLIC ANHYDRIDE WITH HETEROGENEOUSLY PREPARED VANADIUM-PHOSPHORUS-OXYGEN CONTAINING CATALYST COMPOSITION

Tai-Cheng Yang, Mahwah; Krishna K. Rao, Paterson, and I-der Huang, Upper Saddle River, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.Y.

Division of Ser. No. 381,206, May 24, 1982, Pat. No. 4,439,921. This application Oct. 3, 1983, Ser. No. 538,119
Int. Cl.[3] C07D *307/60, 307/89, 307/92*
U.S. Cl. 549—239 3 Claims

1. A process for oxidizing in the vapor phase at least one feed hydrocarbon to a carboxylic anhydride which comprises contacting the feed hydrocarbon, under conditions and in a manner sufficient to form at least one carboxylic anhydride, with a catalyst composition comprising vanadium, phosphorus, and oxygen, said catalyst composition being prepared by the process which comprises:

(a) admixing to form a heterogeneous suspension at least one pentavalent vanadium compound with at least one organic alcohol in a manner and under conditions sufficient to condition said vanadium compound and reduce at least a portion of the pentavalent vanadium to a +4 valence state;

(b) admixing at least one organic alcohol, said conditioned

vanadium compound and at least one phosphorus containing compound, in a manner and under conditions sufficient to form a heterogeneous suspension of a vanadium-phosphorus-oxygen containing catalyst precursor composition having a vanadium valence of from about 3.9 to about 4.7, and a phosphorus to vanadium atomic ratio of from about 0.5:1 to about 2:1;

(c) separating said catalyst precursor composition from said admixture; and

(d) activating said catalyst precursor composition in the absence of air alone by contacting it with an atmosphere comprising a mixture of air and at least one hydrocarbon.

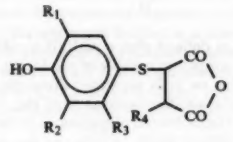
4,497,959

SUBSTITUTED (4-HYDROXYPHENYLTHIO) SUCCINIC ANHYDRIDE OR SUCCINATE STABILIZERS

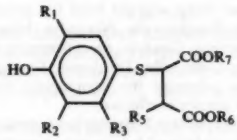
John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 3, 1983, Ser. No. 463,176
Int. Cl.³ C07D *307/64*
U.S. Cl. 549—253 **16 Claims**

1. A compound of formula I or II



(I)



(II)

wherein

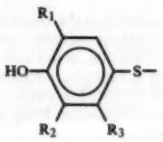
R_1 and R_2 are independently alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms;

R_2 may also represent hydrogen;

R_3 is hydrogen or methyl;

R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, or phenyl;

R_5 is hydrogen, alkyl of 1 to 6 carbon atoms, alkylthio of 1 to 18 carbon atoms, phenylthio, or a group of the structure



where

R_1, R_2 and R_3 are defined above; and

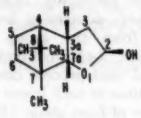
R_6 and R_7 are independently hydrogen, alkyl of 1 to 30 carbon atoms, alkyl of 2 to 4 carbon atoms substituted by alkenoyloxy of 3 to 4 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 12 carbon atoms.

4,497,960

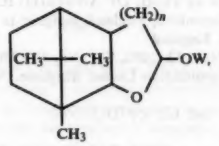
CHIRAL, OPTICALLY ACTIVE COMPOUNDS USEFUL AS PROTECTIVE GROUPS FOR HYDROXY, THIOL AND AMINO COMPOUNDS

Christian Noe, Larochegasse 20/7, A-1130 Vienna, Austria

Filed Dec. 6, 1982, Ser. No. 446,944
Claims priority, application Austria, Dec. 18, 1981, 5453/81
Int. Cl.³ C07D *311/94, 307/93*
U.S. Cl. 549—386 **12 Claims**

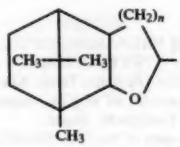


1. Chiral, optically active (R)-enantiomer or (S)-enantiomer of the general formula

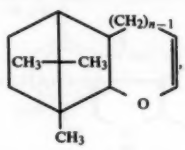


(Ia)

wherein W represents H, alkyl, cycloalkyl or



and n=1 or 2, or the anhydro compound of the general formula



(Va)

wherein n has the same meaning as in the hydrated form of formula Ia.

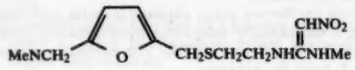
4,497,961

PROCESS FOR THE PREPARATION OF RANITIDINE

John W. Clitherow, Hertfordshire, England, assignor to Glaxo Group Limited, London, United Kingdom

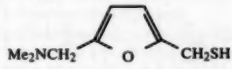
Continuation of Ser. No. 223,484, Jan. 8, 1981, abandoned. This application Dec. 9, 1982, Ser. No. 448,075
Claims priority, application United Kingdom, Jan. 8, 1980, 800581; Dec. 8, 1980, 803936
Int. Cl.³ C07D *307/52*
U.S. Cl. 549—495 **8 Claims**

1. A process for the preparation of the furan derivative of formula (I)



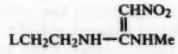
which comprises reacting a thiol of formula (II)

(I)



with an alkylating agent of formula (III)

(II)



where L is a halogen atom.

(III)

4,497,962

PREPARATION OF POLYSILOXANE/POLYOXYALKYLENE COPOLYMER USEFUL AS STABILIZERS IN MAKING POLYURETHANE FOAMS

Armand de Montigny, Leverkusen; Hans-Walter Illger, Roesrath; Alberto C. Gonzalez-Doerner, Leverkusen, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

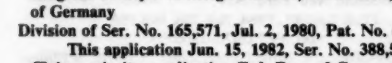
Division of Ser. No. 165,571, Jul. 2, 1980, Pat. No. 4,355,171. This application Jun. 15, 1982, Ser. No. 388,565

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929588

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—446 **1 Claim**

1. A polyorganopolysiloxane of the formula

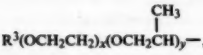


in which

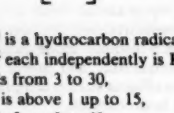
R is an optionally halogen-substituted alkyl group with up to 4 C atoms,

R^1 is the substituent R or a phenyl radical,

R^2 is an aliphatic, optionally unsaturated radical with up to 18 C atoms or a group of the formula



Z is



R^3 is a hydrocarbon radical with up to 4 C atoms,

R^4 each independently is R^3,

n is from 3 to 30,

m is above 1 up to 15,

x is from 0 to 68,

y is from 0 to 52,

x+y is from 1 to 68, and

p is from 2 to 12.

4,497,963

PROCESS FOR THE PREPARATION OF AN ALIPHATIC, CYCLOALIPHATIC, AND/OR ALIPHATIC-CYCLOALIPHATIC DI- AND/OR POLYURETHANE

Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,259

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917490

Int. Cl.³ C07C *125/073*

U.S. Cl. 560—115 **11 Claims**

1. A process for the preparation of an aliphatic, cycloaliphatic, and/or aliphatic-cycloaliphatic di- and/or polyurethane comprising the steps of

A. reacting a primary aliphatic, cycloaliphatic, and/or aliphatic-cycloaliphatic di- and/or polyamine with an O-alkyl carbamate in the presence of an alcohol at temperatures of 160° C. to 300° C., and

B. separating the ammonia and other by-products from the aliphatic and/or cycloaliphatic di- and/or polyurethane.

4,497,964

PROCESS FOR PRODUCTION OF N-ACYL-α-AMINO ACIDS

Iwao Ojima, and Kenji Hirai, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,853

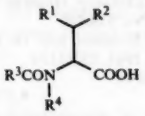
Claims priority, application Japan, Nov. 17, 1981, 56-183146

Int. Cl.³ C07C *51/12*

U.S. Cl. 562—406 **15 Claims**

1. A process for producing an N-acyl-α-amino acid of the formula

(I)



wherein R^1, R^2, R^3 and R^4, independently of each other, represent hydrogen; alkyl or cycloalkyl of up to 20 carbon atoms which may be substituted by halogen, benzyloxy, phenoxy, p-methoxyphenoxy, o-chlorophenoxy, naphthoxy, phenyl, tolyl, xylyl, anisyl or p-dimethylaminophenyl; or an aryl or heteroaromatic group which may be substituted by benzyloxy, hydroxyl, halogen, dimethylamino, acetylamino, methylthio, ethylthio, phenylthio of benzylthio, said aryl or heteroaromatic group being phenyl, naphthyl, furyl, pyrrolyl, pyridinyl, thienyl or indolyl, which comprises reacting an oxirane of the formula

(II)

wherein R^1 and R^2 are as defined above, an amide compound of the formula

$$R^3CONHR^4 \quad \text{(III)}$$

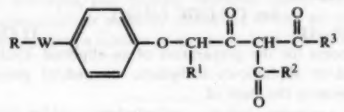
wherein R^3 and R^4 are as defined above, and carbon monoxide in the presence of hydrogen, a cobalt-containing catalyst, and a promoter comprising a compound containing a metal selected from Groups I, II, III and IV of the periodic table.

4,497,965
SUBSTITUTED PHENOXYALKANETRIONES

Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

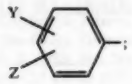
Division of Ser. No. 405,852, Aug. 6, 1982, Pat. No. 4,448,966.
This application Mar. 1, 1984, Ser. No. 585,050
Int. Cl.³ C07C 49/603
U.S. Cl. 568—325 6 Claims

1. A compound of the following formula (A):



(A)

wherein,
R is



R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl;
R^3 is lower alkyl;
W is oxygen, sulfur or amino; and
each of Y and Z is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, halogen, nitro and cyano.

4,497,966
PROCESS FOR THE PREPARATION OF NITROPHENYLALKANOLS

Robert van Helden, and Petrus A. Kramer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 7, 1983, Ser. No. 529,910
Claims priority, application United Kingdom, Sep. 14, 1982, 8226198; European Pat. Off., Jul. 29, 1983, 83201131
Int. Cl.³ C07C 79/24
U.S. Cl. 568—705 8 Claims

1. A process for the preparation of nitrophenylalkanols comprising the hydroxyalkylation of nitrotoluene(s) by the reaction with an aldehyde containing from 1 to 8 carbon atoms in the presence of a solid catalyst prepared by impregnating alumina with a solution containing an alkali metal carbonate or an alkali metal compound which is converted by heating into an alkali metal carbonate, followed by heating at a temperature at which the carbonate loses carbon dioxide.

4,497,967
PROCESS FOR THE PREPARATION OF ETHANOL FROM METHANOL, CARBON MONOXIDE AND HYDROGEN

Chee-Gen Wan, Fort Lee, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,271
Int. Cl.³ C07C 29/136
U.S. Cl. 568—885 7 Claims

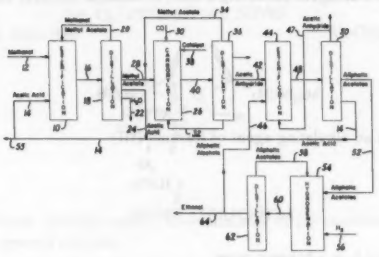
1. A process for the preparation of ethanol from methanol, carbon monoxide and hydrogen feedstocks, comprising the steps of

(a) reacting methanol and acetic acid in a first esterification zone to form methyl acetate;

(b) reacting the formed methyl acetate with carbon monoxide in a carbonylation zone to form acetic anhydride;

(c) reacting the formed acetic anhydride with at least one lower aliphatic alcohol in a substantially anhydrous second esterification zone to form the corresponding lower aliphatic acetates and acetic acid;

(d) reacting the formed lower aliphatic acetates with hydrogen in a substantially anhydrous hydrogenation zone to form both ethanol and also the corresponding aliphatic alcohols from the acetates;



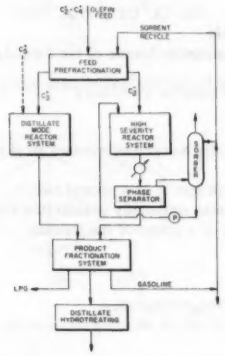
(e) separating the formed alcohol into a first ethanol product stream and a second stream comprising the formed corresponding aliphatic alcohols; and

(f) recycling the second stream to the second esterification zone.

4,497,968
MULTISTAGE PROCESS FOR CONVERTING OLEFINS OR OXYGENATES TO HEAVIER HYDROCARBONS

Bernard S. Wright, East Windsor; Hartley Owen, Belle Mead, and Chung H. Hsia, Matawan, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 11, 1984, Ser. No. 598,955
Int. Cl.³ C07C 1/00
U.S. Cl. 585—304 9 Claims



1. A continuous catalytic process for converting olefinic feedstock comprising ethylene and C_3^+ olefins to heavier liquid hydrocarbon product comprising the steps of

(a) prefractionating the olefinic feedstock to obtain a gaseous stream rich in ethylene and a liquid stream containing C_3^+ olefin;

(b) heating and contacting the liquid stream from the prefractionating step with shape selective medium pore zeolite oligomerization catalyst in a distillate mode catalytic reactor system at elevated temperature and pressure to provide a heavier hydrocarbon effluent stream comprising distillate, gasoline and lighter hydrocarbons;

(c) fractionating the effluent stream to recover distillate, gasoline and lighter hydrocarbons;

(d) recycling at least a portion of the recovered gasoline as a first liquid sorbent stream to prefractionating step (a);

(e) further reacting the recycled gasoline together with sorbed C_3^+ olefin in the catalytic reactor system of step (b);

(f) combining said ethylene-rich gaseous stream from step (a) with a liquid hydrocarbon stream containing heavier liquid hydrocarbons;

(g) contacting the combined ethylene-rich stream at elevated temperature and pressure in a high severity reaction zone with shape selective medium pore zeolite oligomerization catalyst to convert at least a portion of the olefinic components to heavier hydrocarbons;

(h) cooling oligomerization reaction effluent from step (g) to condense at least a portion of said heavier hydrocarbons;

(i) separating the cooled and partially condensed effluent stream from step (h) into a vapor stream comprising unreacted light olefin and a condensed liquid hydrocarbon stream;

(j) fractionating said condensed liquid hydrocarbons from step (i) to provide a second liquid recycle sorbent stream and at least one product hydrocarbon stream;

(k) contacting the vapor stream from separation step (i) under sorption pressure conditions with cooled recycle sorbent stream to sorb said unreacted light olefin into the second sorbent stream; and

(l) recycling the second sorbent stream rich in olefin for further conversion with said olefinic feedstock in step (g).

4,497,969
PROCESS FOR THE PRODUCTION OF CATALYSTS BASED ON CRYSTALLINE ALUMINOSILICATES AND THE USE OF CATALYST SO PRODUCED

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 396,361, Jul. 8, 1982, Pat. No. 4,452,908. This application Mar. 27, 1984, Ser. No. 578,426

Claims priority, application United Kingdom, Jul. 8, 1982, 8122768; Jul. 8, 1982, 8123619

Int. Cl.³ C07C *3/10*

U.S. Cl. 585—415 **1 Claim**

1. In a process for the production of aromatic hydrocarbons at elevated temperature and in the vapor phase by contacting a C_2 to C_{12} aliphatic hydrocarbon feedstock with a catalyst, the improvement which comprises employing as the catalyst a crystalline aluminosilicate having a silica to alumina molar ratio greater than 12:1 which crystalline aluminosilicate is obtained by mixing a source of silica, a source of alumina, a source of alkali metal, water and a source of ammonium ions in the absence of an alcohol or an alkylene oxide in the molar proportions expressed in the case of the silica and alumina sources in terms of the equivalent moles of the oxide, in the case of the alkali metal source in terms of the equivalent moles of the hydroxide, MOH, and in the case of the source of ammonium ions in terms of free ammonia:

SiO_2:Al_2O_3 greater than 12:1

MOH:Al_2O_3 in the range from 1:1 to 20:1

SiO_2:NH_3 in the range from 1:1 to 200:1, and

H_2O:MOH in the range from 30:1 to 300:1,

maintaining the mixture at elevated temperature for a period such that crystallisation occurs, recovering the crystalline aluminosilicate so-formed, cation-exchanging the recovered crystalline aluminosilicate with either gallium or aluminum cations and/or impregnating the recovered crystalline aluminosilicate with a solution of a gallium or aluminum compound and finally calcining the exchanged and/or impregnated crystalline aluminosilicate characterised in that

either the recovered crystalline aluminosilicate or the cation-exchanged crystalline aluminosilicate or the metal impregnated crystalline aluminosilicate is washed with a solution containing either an organic base, a carboxylic acid, an alcohol, a glycol, a phenol or an ester.

4,497,970
AROMATICS PRODUCTION

Dennis Young, Staines, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Apr. 8, 1983, Ser. No. 483,102

Claims priority, application United Kingdom, Apr. 29, 1982, 8212526

Int. Cl.³ C07C *2/00, 5/32*

U.S. Cl. 585—417 **9 Claims**

1. A process for converting a feedstock consisting essentially of methane or ethane into aromatic hydrocarbons by bringing at a temperature of from about 350° to 500° C. a mixture in a fluid phase of said feedstock and an oxidizing agent selected from the group consisting of nitrous oxide, sulfur trioxide, hydrogen peroxide, ozone, nitric oxide, and nitrogen oxyfluoride into contact with a solid acidic catalyst having Bronsted acid sites.

4,497,971
OXIDATIVE DEHYDROGENATION AND CRACKING OF PARAFFINS WITH A PROMOTED COBALT CATALYST

Alan D. Eastman; Jack P. Guillory; Charles F. Cook, and James B. Kimble, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 16, 1983, Ser. No. 552,557

Int. Cl.³ C07C *5/333*

U.S. Cl. 585—658 **48 Claims**

1. A process for the catalytic oxidative dehydrogenation of a paraffin having from 2 to 5 carbon atoms comprising the step of contacting said paraffin under suitable oxidative dehydrogenation conditions with a catalyst composition comprising cobalt; phosphorus; at least one promoter selected from the group consisting of zinc, titanium, zirconium, niobium, indium, lead and bismuth; at least one alkali metal; and oxygen, wherein said catalyst composition is calcined in an inert atmosphere.

4,497,972
PROCESS FOR THE SEPARATION OF ETHYLBENZENE

Richard W. Neuzil, Downers Grove, and Simon H. Hobbs, Oak Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 11, 1983, Ser. No. 540,931

Int. Cl.³ C07C *7/13*; C10G *25/03*

U.S. Cl. 585—828 **6 Claims**

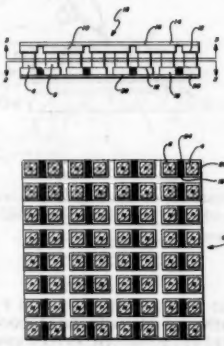
1. A process for separating ethylbenzene from a feed mixture containing ethylbenzene and at least one xylene isomer which comprises contacting said mixture with an adsorbent comprising X structured zeolite containing barium cations at exchangeable cationic sites and which contains from about 3.0 to 6.0 wt% H_2O measured by loss on ignition at 350° C., said contacting being at ethylbenzene adsorption conditions to adsorb said ethylbenzene in the adsorbent, removing the unadsorbed portion of said feed mixture from said adsorbent containing at least one xylene isomer and recovering adsorbed ethylbenzene from said adsorbent by contacting said adsorbent with benzene desorbent at desorption conditions and withdrawing from said adsorbent a stream comprising ethylbenzene and benzene.

4,497,973

THERMOELECTRIC DEVICE EXHIBITING DECREASED STRESS

Donald L. Heath, Leonard, and Der-Jeou Chou, Sterling Heights, both of Mich., assignors to ECD-ANR Energy Conversion Company, Troy, Mich.

Filed Feb. 28, 1983, Ser. No. 470,154
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—212 15 Claims



1. A new and improved thermoelectric device providing both structural integrity and relief of stress across the device, notwithstanding the application of thermally cycled temperature differentials across said device, said device comprising:

a. a plurality of thermoelectric elements;

b. first and second electrical coupling means on opposite respective sides of said thermoelectric elements for interconnecting said elements electrically in accordance with a predetermined pattern;

c. a first rigid substrate afixed to said first coupling means on the side thereof opposite said thermoelectric elements, to provide structural integrity, and;

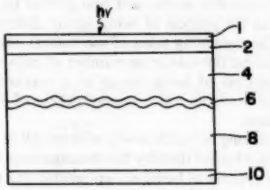
d. flexile stress relieving means associated with said second electrical coupling means, for permitting said elements, said substrate, and said coupling means to expand and contract responsive to thermal cycling of said device.

4,497,974

REALIZATION OF A THIN FILM SOLAR CELL WITH A DETACHED REFLECTOR

Harry W. Deckman, Clinton; Horst Witzke, and Christopher Wronski, both of Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 22, 1982, Ser. No. 443,197
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—259 10 Claims



1. An optically enhanced photovoltaic device comprising:

(a) A layer of semiconductor material contacted on its upper and lower major surfaces by respective top and bottom layers of transparent electrical conductors each having a top and bottom surface with at least one of said surfaces being textured so as to scatter incident light randomly;

(b) a layer of transparent dielectric material fixed to said bottom surface of said bottom layer of said transparent electrical conductor;

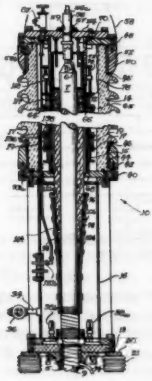
(c) a metal layer fixed to said layer of transparent dielectric material such that radiation incident on said top layer of transparent conductor and which passes through said bottom layer of transparent conductor and said layer of transparent dielectric material is reflected by said metal layer.

4,497,975

RESISTOR AND CAPACITOR GRADED TERMINATION

Jorgen Selsing, Oak Forest, Ill., assignor to G & W Electric Company, Blue Island, Ill.

Filed Nov. 12, 1982, Ser. No. 440,842
Int. Cl.³ H02G *15/30, 15/072*
U.S. Cl. 174—19 4 Claims



1. A termination of a prepared end of a cable, the cable having a conductor, an insulating layer therearound and a grounded outer shield, the termination being adapted when constructed of sufficient size for shielding the cable when carrying DC power in the high potential range whereat power losses in DC transmission approach or become less than power losses in AC transmission, the termination comprising

an outer annular insulator,

a plurality of annular capacitors stacked axially within said insulator and defining an axial passageway for receiving the prepared end of the cable therethrough, said capacitors each comprising a strip of dielectric material and a strip of metal wound as alternate layers coaxial with said insulator, said capacitors providing sufficient capacitance for relieving electrical stress resulting from transient AC currents attendant a cable carrying the high potential DC power,

electrically and thermally conductive rings interposed between adjacent ones of said stacked capacitors, said rings having interior diameters substantially matched to the interior diameters of said capacitors, exterior diameters at least about as great as the exterior diameters of said capacitors, and tab means extending outward of said stacked capacitors for connection to resistors,

at least two resistors electrically connected to said tab means and interconnecting, in parallel, successive stacked rings so as to provide a highly resistive pathway from the conductor to ground to relieve the electrical stress of the high potential DC power, said resistors each having a ceramic core and a semiconductive film spiralled therearound, and

liquid dielectric contained within said outer annular insulator and immersing said resistors and said capacitors.

4,497,976
METHOD FOR EMITTING ADDITIONAL INFORMATION IN CONJUNCTION WITH MESSAGE SIGNALS TO BE TRANSMITTED OVER A DATA SWITCHING CENTER

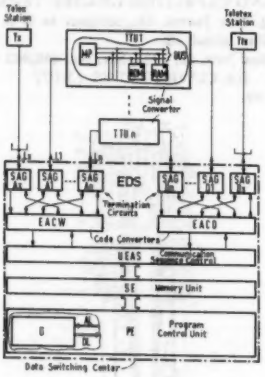
Norbert Torggler, Munich, and Dietmar Franz, Puchheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,628

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206796

Int. Cl.³ H04L *13/08*

U.S. Cl. 178—3 **2 Claims**



1. In a method of transmitting message signals between a teleprinter (i.e. telex) station which transmits and receives in accordance with a first transmission procedure and a teletex station which transmits and receives in accordance with a different, second transmission procedure, the method being of the type in which transmission occurs via at least one signal converter which comprises a memory and which converts received message signals of one transmission procedure into message signals of the other transmission procedure, and in which the signal converter is connected to a data switching center, the improvement therein comprising the steps of:

after occupation of the signal converter by the telex station and storage of message signals sent by the telex station in the memory of the signal converter, transmitting additional information from the data switching center to the signal converter; storing the additional information in the memory of the signal converter;

establishing a connection between the signal converter and the teletex station; and reading the stored message signals and additional information and transmitting the same to the teletex station.

4,497,977
AUTOMATIC COORDINATE DETERMINING DEVICE HAVING ELECTROSTATIC SHIELDING

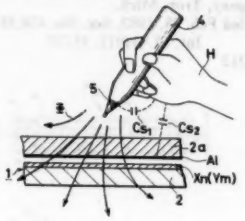
Yasuhiro Saito, and Takaomi Tatemichi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,821

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **4 Claims**

1. An automatic coordinate determining device, comprising: a coordinate tablet having a plurality of separate parallel spaced conductive lines, a probe positionable relative to said coordinate tablet at a coordinate position and having an inductive exciting winding for inductively coupling with said conductive lines, an oscillatory signal generator for magnetizing said inductive exciting winding, scanning detecting means for scanning said conductive lines successively and detecting the induced signal, operation control means for operating the probe coordinate in accordance with the induced signal, a thin film member composed of a non-magnetic conductive substance provided above the upper surface of said coordinate



tablet, and means for connecting the electric potential of said thin film member to the ground terminal of said scanning detecting means.

4,497,978
METHOD AND APPARATUS FOR PREVENTING OVERLOADING OF THE CENTRAL CONTROLLER OF A TELECOMMUNICATION SYSTEM

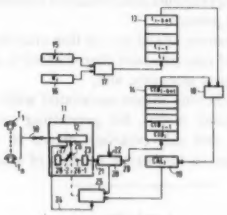
Frederik C. Schoute; Adrianus W. Doorduin, and Jacobus L. M. Hooijmans, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,102

Claims priority, application Netherlands, Jun. 15, 1982, 8202419

Int. Cl.³ H04M *15/10*

U.S. Cl. 179—9 **9 Claims**



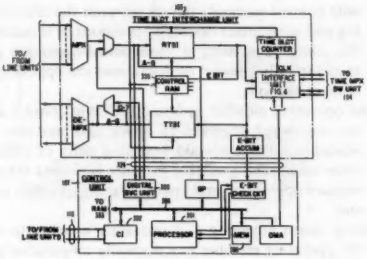
1. A method of preventing overloading of the central controller of a telecommunication system, more specifically a telephone exchange, comprising the following steps:

1. determining the number of calls which were in the process of being set-up in a first period of a predetermined duration;
2. determining the total demand on the capacity of the central controller in the said first period by the number of calls in the process of being set up determined in step 1, and the remaining tasks of the central controller;
3. estimating the maximum number of calls which can be in the process of being set-up at a maximum load of the central controller in a second period of a predetermined duration;
4. determining for each newly offered call in the said second period whether thereby the instantaneous number of calls in the process of being set-up reaches the maximum number determined in step 3;
5. accepting the offered call if and for so long as the number determined in step 3 has not been reached;
6. rejecting the offered call if this was the case; and
7. repeating the steps 1 to 6, inclusive in a subsequent first period for calls to be offered in a subsequent second period.

4,497,979
METHOD FOR PROCESSING ESSENTIAL LINES IN A COMMUNICATION SYSTEM

James J. Phelan, Downers Grove, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 27, 1984, Ser. No. 574,661
Int. Cl.[3] H04Q 3/64
U.S. Cl. 179—18 D 6 Claims



1. For use in a telecommunication system having a switching system serving a plurality of customer stations wherein said stations are grouped according to at least two classes of service, a method for preferentially serving at least one of said station groups comprising the steps of

entering in a first queue in response to each request for service from individual ones of said stations the station identity and time of arrival of each said service request,

examining each entry in the first queue to ascertain the length of time said entry is in said first queue,

identifying the class of service of entries in the first queue that have remained in the first queue in excess of a predetermined threshold time,

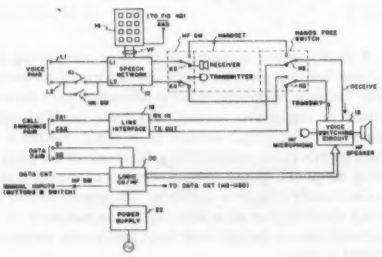
placing in a second queue only those identified entries having a particular class of service, and

serving the stations entered in the second queue at a different rate than the stations entered in the first queue.

4,497,980
HANDSFREE CIRCUIT FOR TELEPHONE INSTRUMENT

Patrick R. Gorman, and William O. Stottlemyer, both of Corinth, Miss., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 16, 1983, Ser. No. 505,428
Int. Cl.[3] H04M 9/08
U.S. Cl. 179—81 B 6 Claims

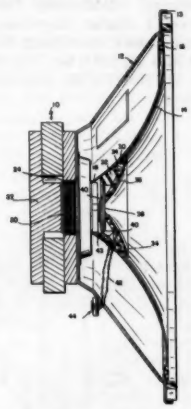


1. A telephone instrument having a handset mode of operation using a handset having a transmitter and receiver, a handfree mode of operation using a microphone and loudspeaker responsive to the operation of at least one switch at said instrument, and a call announce mode of operation using at least said loudspeaker of said instrument in response to a signal from a telephone system to which said instrument is connected; said instrument including a speech network powered from a two wire speech pair of a line to said telephone system to provide gain regulation and a hybrid for a speech path of said instrument, a transmit path for transmitting voice signals from said microphone, and a receive path for transmitting voice signals toward said loudspeaker means for switching said speech network between connection to said handset and connection to said transmit and receive paths, a voice switching network with inputs from both said transmit and receive paths for switching one of said transmit and receive paths to an operative status and the other of said transmit and receive paths to an attenuated status responsive to a comparison of the amplitudes of speech signals in said transmit and receive paths, means in said instrument for operating said means for switching to enable said transmit and receive paths for bidirectional signal transmission through said voice switching network and for inactivating said handset transmitter and receiver, and means in said instrument responsive to signals from said system for enabling at least said receive path for coupling to said speech network for reception of speech signals for said call announce mode.

4,497,981
MULTI-DRIVER LOUDSPEAKER

William N. House, Bloomington, Ind., assignor to Harman International Industries Incorporated, Northridge, Calif.

Filed Jun. 1, 1982, Ser. No. 383,603
Int. Cl.[3] H04R 1/24, 9/06, 17/00
U.S. Cl. 179—115.5 PS 12 Claims



1. A multi-driver loudspeaker combination comprising: a first transducer of the dynamic radiator type designed to reproduce sound in the lower portion of the audio frequency range, said radiator including a diaphragm; a piezoelectric transducer designed to reproduce sound in the upper portion of the audio frequency range, intermediate mounting means mounted on the diaphragm for supporting the piezoelectric transducer, said piezoelectric transducer being positioned within the periphery of the said diaphragm, said piezoelectric transducer being mounted through the intermediate mounting means upon said diaphragm and freely movable therewith in an unrestrained manner.

4,497,982

INPUT UNIT

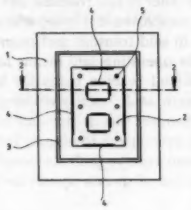
Dieter Michalski, Berlin, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,607

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844575

Int. Cl.³ H01H 13/70

U.S. Cl. 200—5 R 3 Claims



1. An input unit for translating human hand movements into electrical signals indicative of alpha-numeric symbols comprising, in combination:

a generally flat block of insulating material;

a plurality of guide grooves in the upper surface of said block said grooves being arranged in a pattern indicative of the segments of an alpha-numeric character;

a plurality of contact elements respectively provided in each of said grooves and being responsive to physical contact stimulus provided by the human hand; and

means for coupling each of said contact elements to an external electrical circuit.

4,497,983

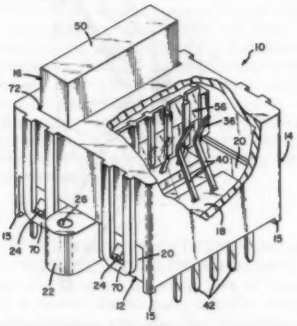
ELECTRICAL HOOK SWITCH

Michael D. Galloway, Middletown; David J. Gingerich, Swatara, and David T. Shaffer, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 23, 1983, Ser. No. 497,381

Int. Cl.³ H01H 9/00, 15/06, 27/00

U.S. Cl. 200—5 R 18 Claims



1. An electrical switch of the type comprising a dielectric base member having parallel rows of a series of stationary electrical contact members mounted in the base member such that the electrical contact members are arranged as opposing pairs of contact sections of opposite sides of a plane extending between the parallel rows of the series of contact members, a movable contact assembly movably mounted between a cover member and the base member with pairs of the contact sections engaging respective contact segments of the movable contact assembly, each of the contact segments including a metal section and a dielectric section to electrically connect the contact sections together when the metal sections are moved to contact-operating positions and to electrically disconnect the contact sections when the dielectric sections are moved to noncontact-operating positions, and an operating member for operating the movable contact assembly to the contact-operating and noncontact-operating positions, characterized in that:

said contact segments being planar and said opposing pairs of contact sections continuously engaging respective contact segments on opposite sides thereof as said movable contact assembly moves between the contact-operating and noncontact-operating positions or is maintained at the contact-operating or noncontact-operating positions to electrically connect or disconnect the opposing pairs of contact sections;

said operating member and said movable contact assembly are connected together to move said movable contact assembly relative to said opposing pairs of contact sections when said operating member is moved between the contact-operating and noncontact-operating positions; and

spring means engaging said operating member to maintain the operating member in a normally inoperative position.

4,497,984

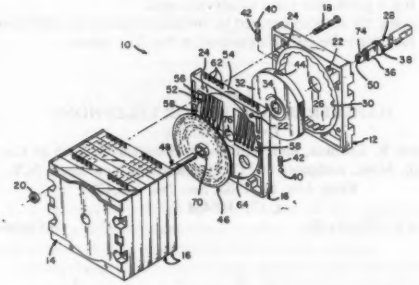
ROTARY SWITCH ASSEMBLY

John J. Ashman, Harrisburg, and David W. Rupnik, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 8, 1983, Ser. No. 511,828

Int. Cl.³ H01H 19/08

U.S. Cl. 200—11 DA 10 Claims



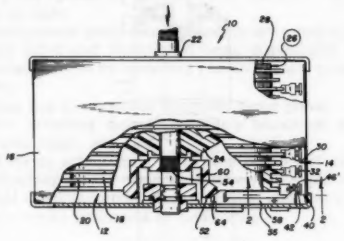
1. A rotary switch assembly of the type comprising stacked dielectric housing members, a cavity is formed between pairs of the housing members, rotary printed circuit boards are disposed in respective cavities and have profiled openings mounted on a profiled section of a shaft, electrical brush contact members are mounted in at least one of the pairs of the housing members, spring contact sections of the contact members electrically engage a surface of the printed circuit boards forming electrical circuits based upon the positions to which the printed circuit boards have been selectively moved, characterized in that:

bushing members are located on the respective printed circuit boards and have profiled bores substantially coincident with the profiled openings of the printed circuit boards increasing the area of engagement on the shaft for rotating and accurately positioning the printed circuit boards relative to the brush contact members and adjacent bushing members engage one another to accurately position the printed circuit boards in their respective cavities.

4,497,985
LINE AND PROGRAM SWITCH ASSEMBLY FOR A TIMING MECHANISM

Harry I. Courter, Indianapolis, and Leroy A. Perry, Danville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 27, 1983, Ser. No. 507,738
Int. Cl.³ H01H *7/00*
U.S. Cl. 200—38 R **1 Claim**



1. A timing mechanism comprising a program cam and switch assembly selectively opening and closing electrical circuits to provide variable programs, power drive means applying power driven rotation to said cam assembly, and an electrical power line switch included as part of said program cam and switch assembly comprising

a power line switch including a line switch electrical contact blade electrically adapted to be connected to a main power supply,

a manually operable actuator means engaging said line switch electrical contact blade,

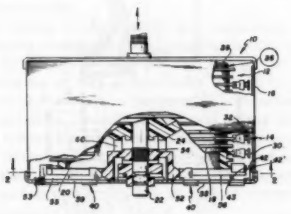
a program electrical contact blade of said program cam and switch assembly biased by a cam of said program cam and switch assembly, and

at least one electrical contact blade carried between said line switch electrical contact blade and said program electrical contact blade.

4,497,986
LINE SWITCH ASSEMBLY FOR A TIMING MECHANISM

David E. Zink, Indianapolis, and Garry A. Stout, Bargersville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Sep. 19, 1983, Ser. No. 533,114
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 R **2 Claims**



1. A timing mechanism comprising a program cam and switch assembly selectively opening and closing electrical circuits to provide variable circuits, power drive means applying power driven rotation to said cam assembly and an electrical power line switch assembly comprising:

(a) a first movable electrical contact blade engaging a cam,

(b) a cooperating second movable electrical contact blade having a distal end carried by a first slider,

(c) electrical contacts carried by said first and second movable electrical contact blades,

(d) a stop means carried by said cam,

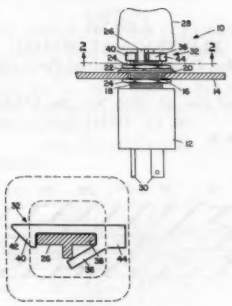
(e) a second slider engaging said stop means, and

(f) manual actuator means engaging said first and second sliders to actuate same simultaneously.

4,497,987
KEYBOARD SPACER

Aleksandras A. Melys, Hillside, N.J., assignor to Sweda International, Inc., Pine Brook, N.J.

Filed Apr. 6, 1981, Ser. No. 251,410
Int. Cl.³ H01H *9/28*
U.S. Cl. 200—42 R **10 Claims**



1. A keyboard spacer for inhibiting the depression of a push button of a keyboard switch having a key stem, comprising:

a trunk portion, the thickness of which inhibits the depression of said push button switch mounted upon said keyboard;

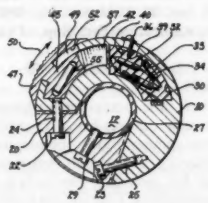
a first resilient arm portion extending from said trunk portion for yieldably engaging said key stem as said spacer is inserted between said push button and said keyboard;

a second latching arm portion extending from said trunk portion and engaging said key stem for latching said spacer between said push button and said keyboard wherein said first resilient arm portion retains said spacer in said latched position.

4,497,988
HANDLEBAR SWITCH

Peter K. Brown, P.O. Box 155, Williams, Ariz. 86046

Filed Dec. 13, 1982, Ser. No. 432,336
Int. Cl.³ H01H *9/06*; B62J *3/00*
U.S. Cl. 200—61.85 **11 Claims**



1. A switch for mounting about the longitudinal axis of a handlebar comprising:

a. a thin, flat, switch body having an opening passing therethrough to accomodate a handlebar; said body, when mounted on a handlebar, having a ratio of thickness mea-

sured parallel to the longitudinal axis of said handlebar, to width measured perpendicular to the longitudinal axis of said handlebar of from 0.5 to 0.06, and preferably approximately 0.17;

b. said body having a removable segment to permit, when removed, said handlebar to be inserted in said opening, said body encircling said handlebar when said segment is replaced;

c. means defining a cavity in said body;

d. a magnetically operable reed switch mounted in said cavity;

e. sealing means for hermetically sealing said cavity;

f. a permanent magnet movably mounted in said body adjacent said cavity; and

g. means for moving said permanent magnet and reed switch toward and away from each other to cause said reed switch to open and close.

4,497,989

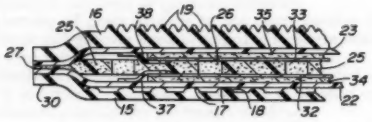
ELECTRIC MAT SWITCH

Norman K. Miller, Concord Industrial Park, Concordville, Pa. 19331

Filed Jan. 20, 1984, Ser. No. 572,589

Int. Cl.³ H01H *3/14*

U.S. Cl. 200—86 R **12 Claims**



1. An electric mat switch comprising a pair of facing spaced generally congruent flexible outer wear layers fabricated of weldable material, a pair of facing spaced flexible inner moisture barrier layers between and generally congruent to said outer wear layers and fabricated of weldable material, a pair of facing spaced flexible conductor layers between said moisture barrier layers generally similar to and smaller than said moisture barrier layers and spaced inwardly from the margins thereof, and a resiliently compressible apertured separator layer of weldable material interposed between said conductor layers and generally congruent to said moisture barrier and wear layers; the overlying margins of said wear layers, moisture barrier layers and separator layer being welded together to locate and retain each conductor layer between the separator layer and a respective moisture barrier layer.

4,497,990

VACUUM SWITCH TUBE

Gerhard Peche, Romrod, and Günter Bialkowski, Berlin, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

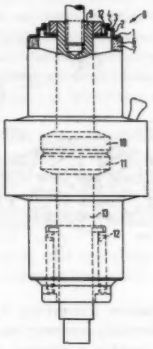
Filed Apr. 25, 1983, Ser. No. 488,187

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216251

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **6 Claims**

1. Vacuum switch tube, comprising a housing, a stationary and an axially movable contact being mutually aligned in said housing, a bellows vacuum-tightly connecting said movable contact to said housing, a stud bolt being connected to said stationary contact for mounting the switch tube, a ceramic tube being connected to said housing and having a given breaking pressure, a flange being concentric with said stud bolt, said flange being mechanically fixed and vacuum-tightly connected with said stud bolt, said flange being resiliently and vacuum-tightly connected with said ceramic tube for carrying said housing, and said flange being formed of a ring being easily elastically deformable in axial direction, a cylindrical wall being integral with said ring and a soldering flange integral with said cylindrical wall, a hard solder connection with a given breaking pressure connecting said soldering flange to said ceramic tube, said flange having a modulus of elasticity permitting said flange to be elastically deformed upon the exertion of pressure on said ceramic tube in axial direction and perpendicular to axial direction and preventing the breaking



force of said ceramic tube and said solder connection from being reached during said elastic deformation, said easily elastically deformable ring having first and second sides, said first side being integral with said cylindrical wall, and including a cylindrical part being integral with said easily elastically deformable ring at said second side thereof, and a housing ring being attached to said stud bolt and being vacuum-tightly welded to said cylindrical part.

4,497,991

GAS-BLAST SWITCH

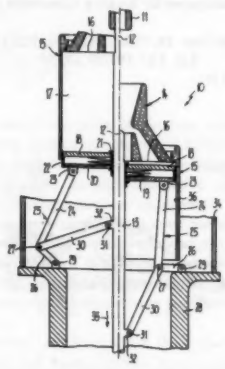
Christian Sturzenegger, Wettingen, and Johann Blatter, Schönenwerd, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Oct. 17, 1983, Ser. No. 542,581

Claims priority, application Switzerland, Oct. 25, 1982, 6190/82

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 A **6 Claims**



1. A gas-blast switch comprising:

a stationary contact element;

drive means for carrying out at least a cut-off stroke;

a movable contact element coupled to said drive means;

a blast nozzle having an inlet;

said blast nozzle surrounding said movable contact element and being conjointly movable therewith;

a pump cylinder enclosing a pump chamber containing an extinguishing gas;

said inlet communicating with said pump chamber;

said pump cylinder being conjointly movable with said blast nozzle to pressurize said pump chamber during said cut-off stroke;

said pump cylinder having opposite ends;

said pump cylinder being bounded by said blast nozzle at one of its ends;

a spring-biased pump piston bounding said pump cylinder at said other end thereof and being displaceable from an initial position by ascending pressure in said pump chamber;

at least one spring acting upon said pump piston;

shock absorbing means operatively associated with said pump piston; and

said spring acting upon said pump piston and said shock absorbing means being successively arranged such that said shock absorbing means becomes effective at the end of a stroke performed by said spring.

4,497,992

AIR CIRCUIT BREAKER

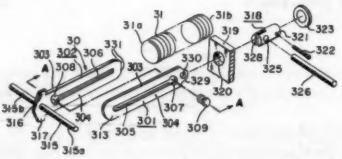
Toshihiko Kodera; Kiyoshi Eguchi; Takayoshi Ishikawa; Yasushi Genba; Shigemi Tamaru, and Susumu Satou, all of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,790

Claims priority, application Japan, Jan. 28, 1982, 57-10973[U]

Int. Cl.³ H01H *3/30*

U.S. Cl. 200—153 SC **4 Claims**



1. An air circuit breaker including an energy accumulating spring, a pair of contact points, and transmitting means for compressing said energy accumulating spring, for transmitting a compression force of said energy accumulating spring during expansion thereof to close said pair of contact points, and for causing pivoting of said energy accumulating spring during said compression and expansion, comprising:

an energy accumulating spring adapted to be compressed for storing energy therein and expanded for closing said pair of contact points;

a second spring holder operatively associated with said transmitting means, said second spring holder comprising means for axially supporting said energy accumulating spring during an axial compression thereof to preclude a non-axial displacement of said energy accumulating spring due to pivoting thereof, said second spring holder comprising means for compressing said energy accumulating spring while said second spring holder and said energy accumulating spring are simultaneously subjected to pivoting; said second spring holder further comprising

a rectangularly shaped plate,

a pin affixed in and extending through said rectangularly shaped plate and having first and second ends adapted to support a first end of said energy accumulating spring, said pin comprising a pivotal connection between said second spring holder and said transmitting means, and

first and second projected pieces extending from said rectangularly shaped plate proximal said transmitting means and adapted to support said first end of said energy accumulating spring;

said first and second projected pieces and said first and second ends of said pin comprising means for simultaneously cooperating with said energy accumulating spring to transmit a compression force transmitted by said transmitting means; and

a first spring holder comprising means for precluding said non-axial displacement of said energy accumulating spring due to pivoting thereof,

wherein said compression force stored in said energy accumulating spring is transmitted to said transmitting means during said expansion of said energy accumulating spring to close said pair of contact points.

4,497,993

DOOR LOCK APPARATUS OF ELECTRIC COOKER

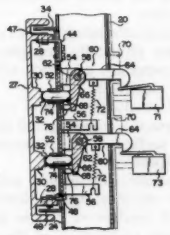
Shuki Aoyama, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 13, 1983, Ser. No. 513,287

Claims priority, application Japan, Jul. 16, 1982, 57-123966; Jul. 19, 1982, 57-109154[U]

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 C **9 Claims**



1. An electric cooking apparatus comprising:

a housing;

a heating chamber provided in said housing;

a door mounted on said housing;

means for providing heating energy to said heating chamber;

a switch for controlling the power supply to said providing means; and

means for locking said door, said locking means including an operation member pivotally supported on said door;

a hook pivotally mounted on said door to oppose said operation member and for engaging with said housing to lock said door in a closed position, thereby enabling said switch to turn on;

a biasing member for biasing said hook to a position at which said hook engages with said housing;

a pusher having two ends and abutting against said operation member at one end and against said hook at the other end to pivot said hook upon the movement of said operation member so as to release engagement between said hook and said housing; and

pusher guide means supported by said door, said guide means for slidably supporting said pusher; wherein

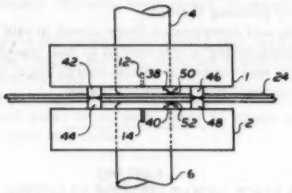
said operation member includes means defining an arcuated pressing surface which abuts against one end of said pusher to urge said pusher along the axis thereof upon the pivotal movement of said operation member, and wherein said hook includes means defining an arcuated action surface which abuts against the other end of said pusher and to which said pusher transmits a force only along an axis parallel with a reference axis of said pusher.

4,497,994

CONTACT DEVICE FOR RESISTANCE SPOT WELDER

Roy E. Flemm, New Kensington, and James R. Morran, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 9, 1983, Ser. No. 465,317
Int. Cl.³ B23K *11/30*
U.S. Cl. 219—109 **1 Claim**



1. Means for making electrical contact with a pair of spot welding electrodes and workpiees engaged by the electrodes during a welding process, said means comprising:

two rigid insulating blocks adapted for mounting on the outside surfaces of respective electrodes of the electrode pair;

means for securing the blocks on and releasing the blocks from the electrodes;

a first electrical conductor integral with each of said blocks and disposed for physically engaging and electrically contacting the respective electrode when the blocks are mounted on the electrodes;

a second electrical conductor integral with each block and disposed for physically engaging and electrically contacting an exposed surface of the respective workpiece engaged by the respective electrode;

further electrical conductors integral with each block disposed to transfer electrical signals directed to the first and second electrical conductors of one block to the other block; said further conductors of the respective blocks being disposed in electrical contact with each other when the second conductors of the blocks engage the respective workpieces;

said electrical conductors extending in a direction substantially perpendicular to the axes of the electrodes when the blocks are mounted thereon; and

means integral with the conductors for respectively electrically connecting the electrical conductors to circuit means located externally of the blocks such that the voltage drop that occurs between the electrodes and between the surfaces of the workpieces when welding current is applied to the workpieces by the electrodes can be measured.

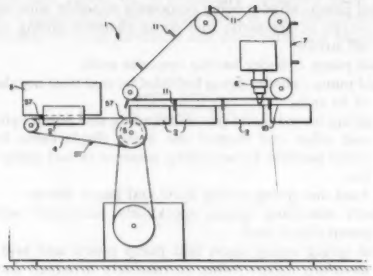
4,497,995

APPARATUS FOR CONTINUOUSLY ADVANCING AND WELDING METAL CAN BODIES AND THE LIKE

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.

Filed Apr. 15, 1982, Ser. No. 368,869
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC **50 Claims**

1. Apparatus for continuously forming and laser welding can bodies and the like comprising forming means for successively forming flat sheets of metal into generally tubular shaped sheets of metal having longitudinally extending edges to be welded, advancing means for successively advancing said generally tubular shaped sheets of metal from said forming means to a first position in a direction toward a laser welding means such that said generally tubular shaped sheets of metal are individually engaged and driven by said advancing means from said forming means to said first position so as to be moving at a predetermined speed at said first position, additionally advancing means for continuously advancing the successive moving, generally tubular shaped sheets of metal from said first position to a second position without stopping and at a



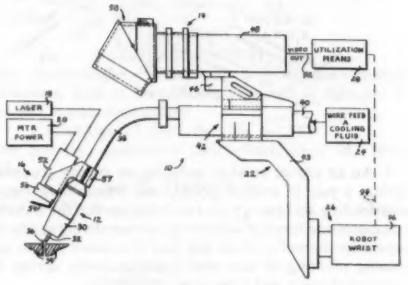
substantially constant speed, and laser welding means arranged for welding the longitudinally extending edges of the generally tubular shaped sheets of metal as they are advanced by said additional advancing means.

4,497,996

ARC WELDING SYSTEM WITH VISION

Charles J. Libby, Jr., West Roxbury, and Barry Gaiman, Bedford, both of Mass., assignors to Automatix Incorporated, Billerica, Mass.

Filed Jan. 18, 1983, Ser. No. 459,019
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.34 **10 Claims**



1. An arc welding apparatus comprising:

A. a movable arc welding torch means;

B. a conical beam generating apparatus comprising:

(1) means for generating a beam of collimated light;

(2) a rotatable reflective cylinder means having a concave reflective surface;

(3) means for rotating said reflective cylinder means;

(4) beam directing mirror means secured with respect to and rotatable with said rotatable reflective cylinder means for directing said beam of collimated light to said reflective surface to produce a conical beam of light having an angular arc that (i) is a function of the radius of the concave reflective surface and the width of the collimated light beam impinging thereon and (ii) illuminates at least a portion of the object to be welded, said conical beam generating apparatus being positioned with respect to and movable with said movable arc welding torch means;

C. means for optically and physically shielding said beam generating apparatus from the welding arc created by said

movable arc welding torch means during welding of the object;

D. means for imaging at least part of the light beam illuminated portion of the object to be welded on an array of photosensitive elements to produce corresponding signals; and,

E. utilization means responsive to said signals for controlling the movement of said movable arc welding torch means.

4,497,997

METHOD AND APPARATUS FOR METAL ARC WELDING WITH CONSTANT CURRENTS

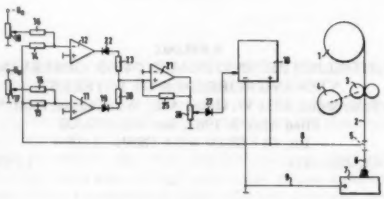
Peter W. Bodewig, Ratingen, Fed. Rep. of Germany, assignor to UTP Schweissmaterial GmbH & Co., Bad Krozingen, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,394

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219726

Int. Cl.³ B23K *9/09*

U.S. Cl. 219—137 PS **15 Claims**



1. A metal arc welding method, wherein current is supplied to a consumable electrode for welding a workpiece, comprising the steps of:

when the arc voltage reaches a predetermined low level, setting the arc current at a high constant value which ensures burn-off of the electrode; and

when the arc voltage reaches a predetermined high level, setting the arc current at a low constant value to maintain the arc.

4,497,998

TEMPERATURE STABILIZED STOP-RESTART OSCILLATOR

Burnell G. West, Fremont, Calif., assignor to Fairchild Camera and Instrument Corp., San Jose, Calif.

Filed Dec. 23, 1982, Ser. No. 452,606

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—210 **4 Claims**

1. A temperature stabilized oscillator comprising:

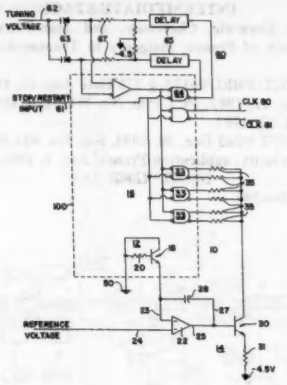
an oscillator for generating a clock signal;

a gate connected to the oscillator for switchably connecting the clock signal from the oscillator to at least one output terminal, the gate being fabricated in an integrated circuit;

at least one additional gate for heating the integrated circuit connected between the oscillator and a first node, each of the at least one additional gate being also fabricated in the integrated circuit;

a temperature sensor disposed in the integrated circuit for producing signals varying in response to variations in temperature of the integrated circuit; and

a control circuit coupled to the temperature sensor, the first node, and a source of electrical potential, for controlling



operation of each of the at least one additional gate in response to the signals from the temperature sensor.

4,497,999

WARM-AIR HAND DRYING APPARATUS USING AN INDUCED HEATED AIR FLOW

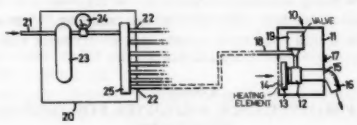
John W. Postbeschild, Witney, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Feb. 16, 1983, Ser. No. 467,049

Claims priority, application United Kingdom, Mar. 2, 1982, 8206095

Int. Cl.³ F24H *7/04;* **H05B** *1/00*

U.S. Cl. 219—365 **8 Claims**

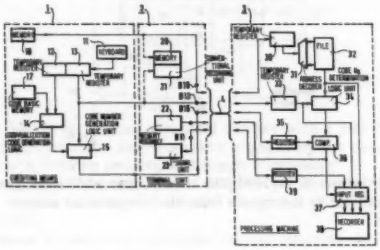


1. A warm-air drying installation comprising a plurality of warm-air hand drying apparatuses, a source of compressed gas, and distributing means connected to the source of compressed gas and having a plurality of outlets for compressed gas each of which is connected to a respective one of the plurality of apparatuses through a supply line, each said apparatus comprising an air moving device operable by the compressed gas, said air moving device having an air inlet through which ambient air enters the air moving device and is entrained by the compressed gas, and an air outlet through which the entrained ambient air flows and is discharged into the hands of the user, and each said apparatus including heating means located at the air inlet of said air moving device for heating the ambient air flowing through the air moving device.

4,498,000
SECURITY METHOD AND DEVICE FOR COMMUNICATING CONFIDENTIAL DATA VIA AN INTERMEDIATE STAGE

Dominique Decavele, Chevreuse, and Jean-Pierre Fournier, Paris, both of France, assignors to Transac-Alcatel, Paris, France

PCT No. PCT/FR81/00173, § 371 Date Aug. 12, 1982, § 102(e) Date Aug. 12, 1982, PCT Pub. No. WO82/02446, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 30, 1981, Ser. No. 414,255
Claims priority, application France, Jan. 7, 1981, 81 00128
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—380 **8 Claims**



1. A security method for confidential digital data communication via an intermediate stage in a system which allows the exchange of transaction data in a transaction between bearers of crediting means (1) and centralized processing machines (3) via non-supervised specific terminal units (2) in which method any communication between a bearer and a processing machine entails communication of the identity of the crediting means used by the bearer to the centralized processing machine by connection of said crediting means to a specific terminal unit and the communication of the holder's specific confidential code to the system by manual insertion of said code by the bearer where the crediting means is linked to the terminal unit, said method further including the following steps:

determining via the crediting means a first code number for identifying the holder and approving the transaction by combining the transaction data relating to the bearer by means of an individualization code supplied by the crediting means on receiving the holder's confidential code; and

communicating the first code number, the transaction data and identity of the specific terminal unit to the centralized processing machine by said specific terminal unit on the basis of the data received from the crediting means and of data which is inherent to said specific terminal unit.

4,498,001
TRANSIMPEDANCE AMPLIFIER FOR OPTICAL RECEIVERS

Lanny S. Smoot, East Orange, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 26, 1982, Ser. No. 401,521
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 A **12 Claims**

8. An improved transimpedance amplifier for converting an incoming optical signal to a corresponding electrical signal comprising:

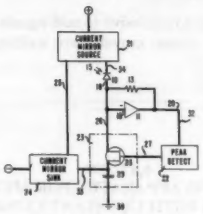
a photodetector for receiving the optical signal and generating a corresponding electrical current with AC and DC components,

an amplifier with an input connected to said photodetector and an output,

means comprising a current mirror connected to the photodetector for sensing and sinking the DC component,

means connected to the output of the amplifier for sensing the AC component,

an impedance means which simultaneously provides an AC path responsive to the AC sensing means to divert the AC

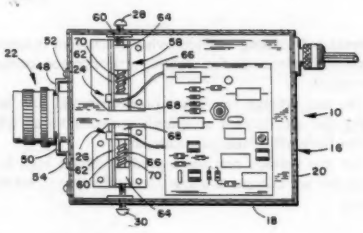


component away from the input of the amplifier and a DC path responsive to the DC sensing and sinking means to divert the DC component of the input current away from the input of the amplifier.

4,498,002
PHOTOELECTRIC INSTRUMENT FOR OBSERVING A VIEWING CORRIDER OF INTEREST

Aris Tekirdaglis, 1231 W. Grant Ave., Wilmington, Calif. 90744

Filed May 3, 1982, Ser. No. 374,335
Int. Cl.³ G01V *9/04*; G08B *13/18*
U.S. Cl. 250—221 **12 Claims**



1. An instrument for detecting changes in a viewing area of interest, comprising:

a hollow, enclosed case,

a lens mounted on said case and positioned to view an area including an area of interest and to project an image into said case,

a track located in said case transverse to the direction of image projection from said lens,

a pair of travelers independently moveable along said track,

means for separately adjusting the position of each traveler on said track from outside of said case,

separate photoelectric sensor means mounted within said case on each of said travelers,

differential amplification means coupled to both of said photoelectric sensor means,

means for defining a reference output from said differential amplification means, adjustable from outside of said case, and

signaling means coupled to said differential amplification means and responsive to departure from said reference output of the output from said differential amplification means.

4,498,003

DEVICE FOR TESTING THE RIMS OF BOTTLE APERTURES FOR FLAWS

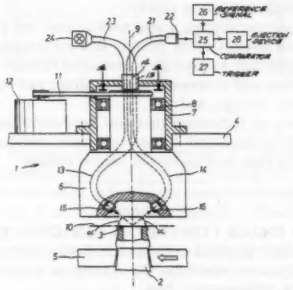
Johannes Cibis, Mintraching, Fed. Rep. of Germany, assignor to Krones A.G. Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 443,094

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147086

Int. Cl.³ G01N *21/90*

U.S. Cl. 250—223 B **9 Claims**



1. A device for testing the sealing surface surrounding the apertures of bottles for flaws, comprising:

a rotor and means for driving said rotor such that its axis of rotation is substantially perpendicular to the plane of said sealing surface during a test cycle,

means mounted to said rotor and operative to project a beam of light onto said sealing surface and means mounted to said rotor for receiving light reflected from said sealing surface that is being tested for flaws, the optical axes of said light projecting and light receiving means lying in a common scanning plane which is substantially perpendicular to the sealing surface plane and which axes intersect the sealing surface plane within a first inspection field tangentially to the sealing surface plane and wherein the two optical axes are inclined at the same acute angle relative to said plane, and

a photosensitive element optically coupled to said means for receiving the reflected light and being operative to produce electric signals that are proportional in amplitude to the intensity of the reflected light which intensity depends on whether or not there is a flaw in said sealing surface.

4,498,004

FIBER OPTICAL MEASURING DEVICE, EMPLOYING A SENSOR MATERIAL WITH A NON-LINEAR INTENSITY RESPONSE CHARACTERISTIC FOR MEASURING PHYSICAL QUANTITIES

Morgan Adolfsson; Torgny Brogardh; Sture Göransson, and Christer Ovrén, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed May 17, 1982, Ser. No. 379,026

Claims priority, application Sweden, May 18, 1981, 8103100

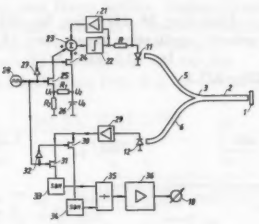
Int. Cl.³ G02B *5/14*

U.S. Cl. 250—227 **12 Claims**

1. A measuring device for measuring a physical and/or chemical quantity comprising a measuring transducer and an evaluating electronic unit interconnected by a light-conducting fiber means, said evaluating electronic unit comprising a light source means for transmitting light via said fiber means to at least one sensor element forming a part of said measuring transducer, said evaluating electronic unit also comprising light detector means for detecting light emitted from said sensor element, wherein

said at least one sensor element possesses a non-linear relationship between the intensity of the light incident upon it and the intensity of the light emitted from it,

said light source means is emitting light at least at two different light intensities, and



said detector means measuring the light emitted from said sensor element in response to the different incident light intensities.

4,498,005

CASSETTE HAVING RADIATION IMAGE STORAGE MEDIUM

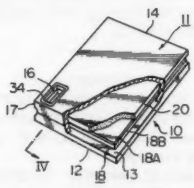
Hiroshi Oono, and Tsutomu Teshima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 9, 1982, Ser. No. 440,377

Claims priority, application Japan, Nov. 14, 1981, 56/182703

Int. Cl.³ H05B *33/00*

U.S. Cl. 250—327.2 **6 Claims**



1. A cassette for use in a radiation image recording and readout system comprising:

a storage medium including a layer of stimulable phosphor for storing therein a latent image formed by an imagewise radiation, a layer of light absorbing material absorbing stimulative rays for said stimulable phosphor layer, and an identification provided on the layer of light absorbing material to be sensable for identifying said storage medium; and

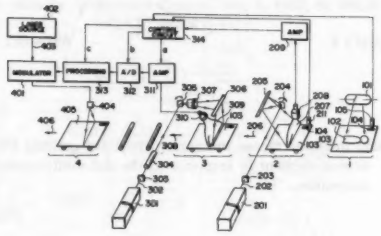
casing means for enclosing said storage medium therein, said casing means having two main surfaces, one of which transmits the imagewise radiation impinging thereon to the layer of stimulable phosphor, and the other of which opposes the layer of light absorbing material;

said casing means having an opening provided in said other main surface substantially in correspondence in position with the identification so as to enable sensing of the identification through the opening from the outside of the cassette.

4,498,006
RADIATION IMAGE READ-OUT METHOD AND APPARATUS

Kazuo Horikawa, and Satoshi Arakawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 15, 1982, Ser. No. 441,984
Claims priority, application Japan, Nov. 13, 1981, 56-181831
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 **7 Claims**



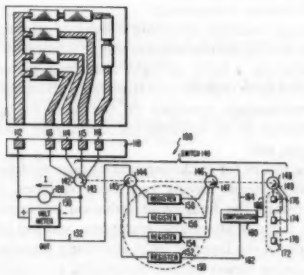
1. In a radiation image read-out method in which a stimulable phosphor sheet carrying a radiation image stored thereon is exposed to a stimulating ray which causes the stimulable phosphor sheet to emit light in the pattern of the stored image, and the emitted light is photoelectrically read out,

the radiation image read-out method comprising: conducting a preliminary read-out by exposing the stimulable phosphor sheet to the stimulating ray having stimulation energy lower than stimulation energy of a stimulating ray used in a final read-out, measuring the interval between the radiation image recording on the stimulable phosphor sheet and the preliminary read-out, determining decay characteristics of light emitted from the stimulable phosphor sheet upon exposure thereof based on said interval measured, correcting the image input information detected by said preliminary read-out according to said decay characteristics determined, setting the final read-out conditions and/or the image processing conditions based on the corrected image input information, and conducting the final read-out.

4,498,007
METHOD AND APPARATUS FOR NEUTRON RADIATION MONITORING

Alfred Schwarzmann, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 390,869
Int. Cl.³ G01T *3/00, 3/08*
U.S. Cl. 250—390 **10 Claims**



1. A method of determining whether a neutron radiation monitor has been exposed to at least a predetermined cumulative neutron flux value, said radiation monitor including a neutron radiation sensor and at least one calibration resistor the value of said at least one resistor having been trimmed to provide a known relationship to the resistance value of said sensor after said sensor has been exposed to said predetermined neutron flux, said method comprising the steps of:

passing a predetermined current through said neutron radiation sensor;

measuring the voltage across said sensor when passing said predetermined current therethrough to provide a measured sensor voltage;

passing said predetermined current through said at least one trimmed calibration resistor;

measuring the voltage across said at least one trimmed calibration resistor when passing said predetermined current therethrough to provide a measured resistor voltage;

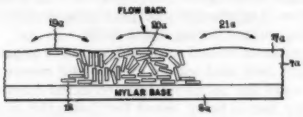
comparing said measured sensor voltage and said measured resistor voltage; and

providing an indication that said predetermined flux value has been exceeded if said measured resistor voltage is greater than said measured sensor voltage.

4,498,008
X-RAY IMAGE CONVERTER DEVICES UTILIZING RARE EARTH OXYHALIDE PHOSPHORS

Jacob G. Rabatin, Montville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 8, 1983, Ser. No. 483,342
Int. Cl.³ G01J *1/58*
U.S. Cl. 250—486.1 **17 Claims**



1. An improved X-ray image converter which includes a phosphor layer of plate-like phosphor crystals having the structural formula:

$$LnOX:T_x$$

wherein

Ln is one or more of La and Gd,

X is one or more of Cl and Br, and

T_x is an activator ion selected from Tb and Tm, including mixtures thereof,

said phosphor layer being formed with the plate-like crystals being aligned generally parallel to the longitudinal axis of said phosphor layer at both surface regions while the intermediate phosphor crystals are aligned generally perpendicular to said longitudinal axis.

4,498,009
OPTICAL LITHOGRAPHIC SYSTEM HAVING A DYNAMIC COHERENT OPTICAL SYSTEM

George O. Reynolds, Waban, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 22, 1982, Ser. No. 421,625
Int. Cl.³ B23K *9/00;* **H01L** *21/26*
U.S. Cl. 250—452.1 **6 Claims**

1. An optical lithographic system comprising:

A. a first substrate;

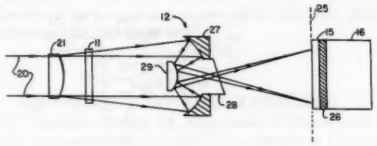
B. an ultraviolet source of illumination;

C. a dynamic coherent optical condenser coupled to receive said illumination from said ultraviolet source, said condenser having a frequency cutoff typical of an incoherent optical condenser and which has high contrast and resolution typical of a coherent optical condenser;

D. a mask including a desired image to be exposed on said first substrate;

E. an ultraviolet sensitive photoresist layer on said first substrate whose sensitivity is substantially matched to that of said ultraviolet source of illumination;

F. a reflective optical imaging system for imaging a representation of said mask onto said photoresist layer, said



optical imaging system comprising a Cassagrain-type telescope design having a primary focusing mirror with a central obscuration, wherein the diameter of said obscuration is less than one-third the diameter of said primary focusing mirror; and

G. means for focusing said representation of said mask produced by said optical system onto said photoresist layer to within a predetermined depth of focus.

4,498,010

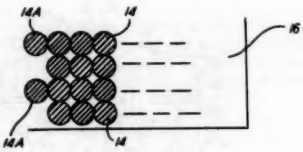
VIRTUAL ADDRESSING FOR E-BEAM LITHOGRAPHY

Charles S. Biechler, Hayward; Allen M. Carroll, Berkeley; Richard E. Graves, Fremont, and Steven A. Lyons, Oakland, all of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 5, 1983, Ser. No. 491,678

Int. Cl.³ H01J *37/302, 37/317*

U.S. Cl. 250—492.2 **11 Claims**



1. In the fabrication of integrated circuits in a particle beam apparatus, the steps in the process comprising,

forming a particle beam of the desired diameter thus defining the width of a pixel,

providing a resist material to be irradiated by said beam on a substrate,

forming pixels by directing said beam onto said resist material,

controlling said beam as it forms said pixels to form a plurality of adjacent lines of pixels which lines define a feature of a predetermined length and width,

controlling said beam as it forms said area to form pixels adjacent said feature to change said feature by approximately ½ a pixel width when said resist material is developed, and finally,

developing said resist material.

4,498,011

DEVICE FOR RECEIVING, MOVING AND RADIATION-SHIELDING OF VESSELS FILLED WITH EXPENDED REACTOR FUEL ELEMENTS

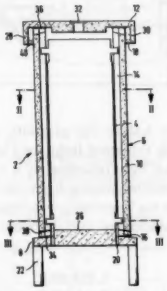
Hans P. Dyck, Burgdorf; Klaus Janberg, Ratingen; Wolfgang Richter, Lantzen, and Harry Spilker, Graben-Neudorf, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft fur Wiederaufarbeitung, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,750

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017767

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—507.1 **1 Claim**



1. A device for receiving, moving, and radiation shielding of vessels filled with expended reactor fuel elements, comprising a protective concrete container having a base; a cylindrical protective jacket, the inner diameter of which is somewhat greater than the diameter of the vessel holding the fuel elements to provide an annular space therebetween; a cover; lateral air inlet ducts at the lower rim of the jacket in communication with the atmosphere and said annular space; and lateral air outlet ducts in the region of the upper rim of the jacket below the cover in communication with the atmosphere and said annular space, characterized in that

said base consists of a movable pallet separate from said jacket having a central platform for supporting said fuel element vessel, said jacket resting upon the margin of said base surrounding said platform,

said base carries centering means to properly position said jacket on said base, and is supported by legs to permit underrun for lifting,

said air outlet ducts have two inclined segments joined at an apex within the wall of said jacket, an inner segment opening into said annular space and an outer segment opening to the atmosphere, said inner segment being longer than and extending below said outer segment,

said cover is in the form of a hood having a downwardly-turned flange spaced from and surrounding said jacket and extending below said outlet ducts.

4,498,012

ABSOLUTE RADIOMETRIC DETECTOR

C. Richard Duda, El Segundo, Calif., assignor to United Detector Technology, Hawthorne, Calif.

Filed Feb. 2, 1983, Ser. No. 463,258

Int. Cl.³ G01J *1/42*

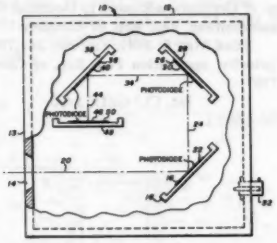
U.S. Cl. 250—578 **8 Claims**

1. A radiometric detector comprising:

an enclosure having means through which a light beam can enter said enclosure;

a plurality of light sensitive devices which produce electrical signals responsive to impinging light, the devices being positioned within the interior of the enclosure in a manner allowing said light beam to impinge upon a surface of one

of said devices and the light reflected from said surface of one of said devices to impinge on a surface of another of said devices, with any of such light reflected therefrom impinging on still another of said devices with such arrangement similarly established for each of said devices



except for the last in the plurality of devices to be impinged by such reflected light, said last device being positioned such that light reflected by it is reflected back in the direction of said impinging light; and

an output means for providing external access to an electrical signal produced by said devices.

4,498,013

SOLID STATE IMAGE SENSOR EXHIBITING REDUCED IMAGE SMEARING EFFECTS

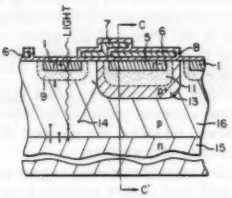
Takao Kuroda, Osaka; Kenju Horii, Shiga, and Shigenori Matsumoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1982, Ser. No. 363,518

Claims priority, application Japan, Mar. 30, 1981, 56-47834

Int. Cl.³ H01L *27/14*

U.S. Cl. 250—578 **5 Claims**



1. A solid state image pickup device comprising, on a major surface of a semiconductor substrate, a plurality of photoelectric, transducers, signal readout means for reading out a signal charge stored in each of said plurality of photoelectric transducers and an impurity concentration in a first substrate region enclosing said readout means adjacent to said photoelectric transducers and which is higher than an impurity concentration in a second substrate region under said photoelectric transducers.

4,498,014

ELECTRIC GENERATING SYSTEM

Daniel Reyes, 233 Broadway, Room 3615, Brooklyn, Nebr.W YORK 10007

Filed Mar. 29, 1983, Ser. No. 460,675

Int. Cl.³ F01D *15/10*

U.S. Cl. 290—4 **3 Claims**

1. An electric generating system which comprises:

(a) an external power source;

(b) an expansion engine connected to the power source;

(c) a large generator electrically connected to output of the expansion engine;

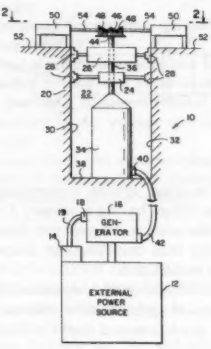
(d) a housing having a well;

(e) a pair of bearings mounted to side walls of the well;

(f) a motor having a drive shaft, the motor mounted vertically at bottom of the well, electrically connected to output of the generator with the drive shaft rotatably mounted in the bearings having an end extending therefrom;

(g) a large bevel gear driven by the drive shaft of the motor;

(h) a plurality of small bevel gears, each small bevel gear radially aligned and driven by the large bevel gear; and



(i) a plurality of small generators, each small generator having a driven shaft affixed to a small bevel gear and mounted to the housing around the well to produce a distributed output of electrical power from such generator wherein each of the driven shafts of the small generators is pivotable so that each driven shaft can go to an up position to disengage the small bevel gear from the large bevel gear making each of the small generators inoperative when needed.

4,498,015

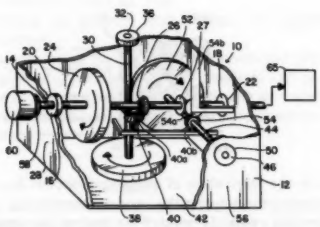
FLYWHEEL DEVICE FOR A MOVING VEHICLE

Mario H. Gottfried, Mexico City 21, D F/0400, Mexico

Filed Dec. 13, 1982, Ser. No. 449,487

Int. Cl.³ B60L *11/16*

U.S. Cl. 290—15 **9 Claims**



9. An energy storage device comprising:

a first flywheel mounted on a first shaft extending in a first plane between a first bearing and a second bearing;

an enclosure with a wall in which said first bearing is embedded and with an opening through a wall on the opposite side of said enclosure in which said second bearing is attached to said enclosure and through which said first shaft protrudes;

a second flywheel mounted on a second shaft extending in a second plane perpendicular to said first plane between a third bearing and a fourth bearing, said third and fourth bearings being embedded in the walls of said enclosure;

a third flywheel mounted on a third shaft extending in a third

plane perpendicular to said second plane and perpendicular to said first plane between a fifth bearing and a sixth bearing, said fifth and sixth bearings being embedded in the walls of said enclosure;

a first beveled gear mounted on said first shaft meshing with a second beveled gear mounted on said second shaft, whereby rotary motion and torque of said first shaft is transmitted to said second shaft; and

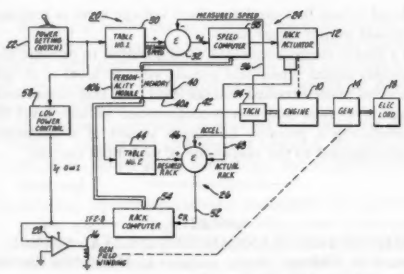
a third beveled gear mounted on said first shaft meshing with a fourth beveled gear mounted on said third shaft, whereby rotary motion and torque of said first shaft is transmitted to said third shaft.

4,498,016

LOCOMOTIVE GOVERNOR CONTROL

Walter E. Earleson; Dennis M. King, both of Peoria, and Michael E. Moncelle, Normal, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 4, 1983, Ser. No. 520,372
Int. Cl.³ F02C *9/04*
U.S. Cl. 290—40 R **22 Claims**



1. A control system for an engine-generator unit (**10,14**) of the type having a fuel delivery control (**12**) and a field current controller (**28**), comprising:

a power selector (**22**) having a plurality of selectable power settings;

speed calculator means (**24**) for deriving a speed error signal as a function of the power selector setting and the actual engine speed and for applying an output which is a function of the speed error signal to the fuel delivery controller (**12**); and

rack calculator means (**26**) for deriving a rack error signal as a function of actual engine speed and actual fuel delivery controller setting and for applying an output to the field current controller (**28**) which is a function of the rack error signal.

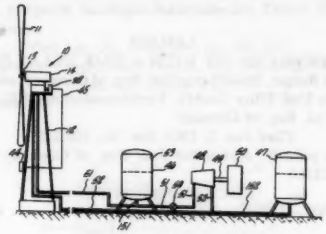
4,498,017

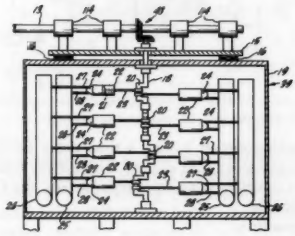
GENERATING POWER FROM WIND

William E. Parkins, 20120 Wells Dr., Woodland Hills, Calif. 91364

Continuation-in-part of Ser. No. 450,462, Dec. 16, 1982, , which is a continuation-in-part of Ser. No. 385,330, Jun. 4, 1982,. This application Apr. 21, 1983, Ser. No. 487,099
Int. Cl.³ F03D *17/02, 49/02;* F04B *49/00*
U.S. Cl. 290—44 **30 Claims**

1. Apparatus for regulating the rotation of a wind responsive rotor of a wind machine comprising rotatable shaft means driven by a rotor thereby to be rotatable in response to wind action on the rotor, the shaft means being adapted to activate multistage pump means, each stage having intake means coupling a common fluid intake line with the stage and discharge means coupling a common fluid discharge line with the stage, first constricting means located in a discharge line from the stages, control means to regulate controllably the operative positions of the intake means or discharge means on selected stages and the first constricting means thereby to change the pumping status of the stages effectively pumping fluid between the intake line and discharge line, fluid being adapted to pass





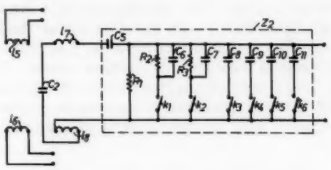
into and from all the selected stages thereby to vary controllably the torque on said shaft for a given shaft power transmitted thereby to permit regulation of the rotor rotational speed.

4,498,018

BALANCING IMPEDANCE INCLUDED IN A FORK

Bengt G. Löfmark, Skärholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 4, 1982, Ser. No. 439,028
Claims priority, application Sweden, Nov. 24, 1981, 8106977
Int. Cl.³ H04B *1/58*
U.S. Cl. 307—17 **6 Claims**



1. A balance impedance in a transformer hybrid circuit, said circuit including a two-wire path including a capacitor and, connected to said capacitor, a two-wire line including a line capacitance and a terminating resistance, a first and a second four-wire path and a balancing path, a balancing impedance connected to said balancing path, said balancing impedance including a first capacitor (**C5**) whose capacitance corresponds to said two-wire line capacitance and to said capacitance in the two-wire path, a first resistor, said first capacitor being connected in series with said first resistor (**R1**) whose value corresponds to said terminating resistance, a plurality of branches each including a capacitor (**C6, C7,** . . .) connected in parallel with said first resistor and switch means (**k1, k2,** . . .) included in said branches for selectively connecting each of said

branches to said first capacitor, at least one of said branches including further resistor (R2, R3) connected in parallel with the capacitor in said one branch for simulating the line capacitance.

4,498,019

SWITCHING CIRCUIT WITH A TIME DELAY DEVICE

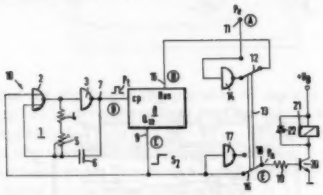
Hermann Berger, Heidelberg, Fed. Rep. of Germany, assignor to Chemie Und Filter GmbH, Verfahrenstechnik KG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,268

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221364

Int. Cl.³ H01H *43/00*

U.S. Cl. 307—132 E **4 Claims**



1. A switching circuit having a time delay device whose output signal actuates a load element with a delay relative to an input control signal arriving from input means, the time delay device comprising:

a pulse generator,

a pulse counter having a counter input which receives pulses from the pulse generator, the pulse counter further having an output which is arranged to transmit a counter output signal after the counter input receives a predetermined number of pulses, and the pulse counter also having a resetting input which receives the input control signal,

a holding circuit for maintaining the counter output signal up to the time of resetting and renewed start of the counting operation,

an inverting device for the input control signal,

a signal inverter for the counter output signal, and

a switch mode selection device arranged to assume first and second positions, the switch mode selection device including a first contact which connects the resetting input of the pulse counter with an output of the inverting device in the first position and, in the second position, connects the resetting input directly with the input means, the switch mode selection device further including a second contact which connects the output of the pulse counter directly with a control input of the load element in the first position and, in the second position, connects the output of the pulse counter with the control input through the signal inverter.

4,498,020

CURRENT TO FREQUENCY CONVERTER

William H. Giolma, and John D. Morgan, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 19, 1981, Ser. No. 312,441

Int. Cl.³ H03K *3/01, 5/24*

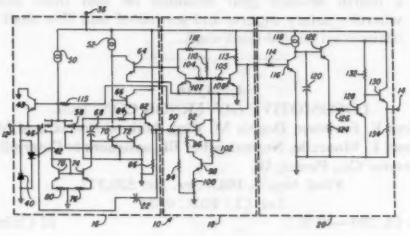
U.S. Cl. 307—261 **10 Claims**

1. A current to frequency converter having an input terminal with an input current applied thereto, comprising:

(a) a first means having first and second inputs and an output, with said first input connected to said input terminal and with said second input connected to a constant voltage level and a feedback capacitor connected between said first input and said output for producing an output voltage level having a rate of change from a first to a second predetermined voltage level proportional to the magnitude of said input current;

(b) a second means for selectively connecting said input terminal to said constant voltage level in response to an output signal;

(c) a third means for selectively altering the energy on said feedback capacitor to change the said output voltage level at said output from said second predetermined voltage



level to said first predetermined voltage level in response to said output signal; and

(d) a fourth means connected to said output to provide said output signal when said output voltage level is at said second predetermined voltage level until said output voltage level is at said first predetermined voltage level for producing a plurality of output signals at a frequency proportional to the magnitude of said input current.

4,498,021

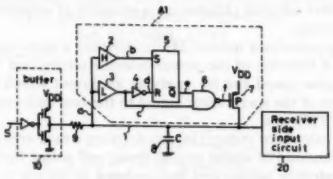
BOOSTER FOR TRANSMITTING DIGITAL SIGNAL

Masaru Uya, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 13, 1982, Ser. No. 397,871

Int. Cl.³ H03K *5/12, 6/04*

U.S. Cl. 307—443 **9 Claims**



1. A digital signal transmission circuit comprising:

a detection means for receiving voltages of a signal line for transmitting digital voltage signals and detecting whether an instantaneous signal line voltage is in a specified voltage range which is between a predetermined first voltage and a predetermined second voltage, said second predetermined voltage being higher than said first predetermined voltage, lower than said predetermined first voltage, or higher than said predetermined second voltage, and

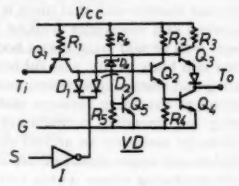
a current injection means which injects current into said signal line under control of the output of said detection means, in a manner that said current injection means injects currents into said signal line when said signal voltage on said signal line is in said specified voltage range, said current being injected after said signal voltage is detected to be within said specified voltage range and the signal voltage has increased from a voltage lower than said first predetermined voltage.

4,498,022

TRISTATE OUTPUT BUFFER WITH HIGH-IMPEDANCE STATE RESPONSIVE TO INCREASE IN POWER SUPPLY VOLTAGE

Kazumi Koyama, Takarazuka; Toshitaka Fukushima, and Yuichi Kawabata, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 11, 1981, Ser. No. 329,925
Claims priority, application Japan, Dec. 25, 1980, 55-184562
Int. Cl.³ H03K 3/013, 19/088, 19/092
U.S. Cl. 307—473 19 Claims



1. An output buffer circuit operative upon the supply of a power source voltage and capable of three-output states including a high level, a low level and a high impedance, the high and low levels being produced in response to an input signal, comprising:

output means, operatively connected to receive the power source voltage and to a ground terminal, for generating the three output states where only one is generated at a time; and

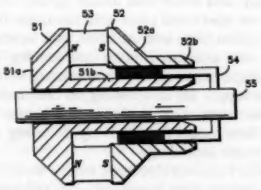
a detector circuit, operatively connected to receive the power source voltage, for detecting a rise in the power source voltage and forcing said output means to generate the high impedance output state irrespective of the input signal when the rise in the power source voltage is detected.

4,498,023

VOICE COIL LINEAR MOTOR WITH INTEGRAL CAPACITOR

Roger P. Stout, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1983, Ser. No. 546,775
Int. Cl.³ H02K 41/00
U.S. Cl. 310—14 12 Claims



1. A voice coil motor having fixed pole pieces and a moveable armature wherein said armature comprises:

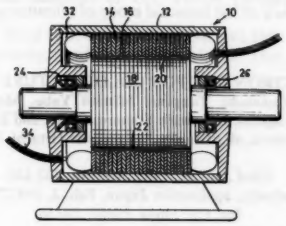
a cylindrical, electrically conductive member of varying height located adjacent at least one of said pole pieces, said member and at least one of said pole pieces forming a capacitor.

4,498,024

SYNCHRONOUS ELECTRODYNAMIC MACHINE WITH PERMANENT MAGNETS AND COOLED BY A LIQUID

Antonio Moretti, Bonnelles, and Louis Banon, Paris, both of France, assignors to Regie Nationale des Usines Renault, Paris, France

Filed Apr. 21, 1983, Ser. No. 487,015
Claims priority, application France, Apr. 23, 1982, 82 06987
Int. Cl.³ H02K 9/00
U.S. Cl. 310—54 9 Claims



1. A synchronous electrodynamic machine comprising:

(a) a hollow cylindrical housing having an end wall at each end thereof;

(b) a stator mounted in said housing, said stator having an inner cylindrical wall which is continuous and smooth and a plurality of axial cooling channels extending through said stator in parallel to said inner cylindrical wall;

(c) a bearing centrally mounted in each end wall of said housing;

(d) a rotor mounted in said bearings for rotation within said stator, said rotor having an outer cylindrical wall which is continuous and smooth, said rotor being sized, shaped, and positioned such that there is a narrow, symmetrical, annular gap between the outer cylindrical wall of said rotor and the inner cylindrical wall of said stator, said rotor comprising a plurality of radially disposed permanent magnets;

(e) an inlet for cooling fluid in one of said end walls;

(f) an outlet for the cooling fluid in the other of said end walls; and

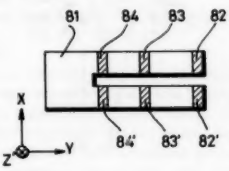
(g) means for introducing the cooling fluid into said housing through said inlet, for causing the cooling fluid to flow continuously in a single axial direction through said annular gap and said axial cooling channels, and for causing the cooling fluid to flow out of said housing through said outlet.

4,498,025

TUNING FORK

Kunihiro Takahashi, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,488
Claims priority, application Japan, Dec. 12, 1980, 55-175604; Jul. 2, 1981, 56-104304
Int. Cl.³ H01L 41/08
U.S. Cl. 310—312 20 Claims



1. A tuning fork type resonator utilizing coupling between

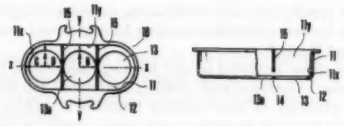
the flexural mode of vibration and the torsional mode of vibration, comprising: a tuning fork body having a pair of vibratable arms; a first mass deposited on an intermediate portion between the free end and the fixed end of each arm, the first masses being positioned on the intermediate portions of the arms at positions wherein addition or reduction of the amount of the first masses does not effect a change of the frequency of the torsional mode of vibration and does effect a variation of the frequency of the flexural mode of vibration; and a second mass deposited at least on one other portion of each arm, the second masses being positioned at positions wherein addition or reduction of the amount of the second masses effects a variation of the frequency of the torsional mode of vibration.

4,498,026

ELECTRON GUN FOR COLOR PICTURE TUBE

Masaaki Yamauchi, Tougane; Minoru Yabe, Mobara; Shoji Shirai, Koganei; Hidemasa Komoro, Chiba, and Kenichi Matsuda, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,450
Claims priority, application Japan, Feb. 3, 1982, 57-14991
Int. Cl.³ H01J *29/50, 29/56*
U.S. Cl. 313—414 **3 Claims**



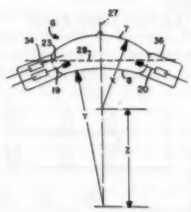
1. In an electron gun for a color picture tube comprising opposing cup-shaped electrodes each having a plurality of openings laterally aligned in a row, said electrodes being combined such that said openings face each other to form electron lenses, the improvement wherein, in at least one of said electrodes, said openings are formed in a flat bottom wall of said electrode, a bridge portion between adjacent openings has a width 0.5 to 1.5 times a thickness of said bottom wall, and corrective plate electrodes are arranged to oppose said bridge portions with a predetermined distance therefrom inside said electrode.

4,498,027

ARC DISCHARGE LAMP WITH IMPROVED STARTING CAPABILITIES, IMPROVED EFFICACY AND MAINTENANCE, AND LINE-OF-SIGHT ARCHED ARC TUBE FOR USE THEREWITH

Robert J. Karlotski, Hillsboro; Ronald C. Lekebush, Goffstown, and Joseph S. Kulik, Jr., Allenstown, all of N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 11, 1982, Ser. No. 387,407
Int. Cl.³ H01J *61/30, 61/32*
U.S. Cl. 313—634 **6 Claims**



1. A line-of-sight arched arc tube for horizontal operation having improved starting capabilities, improved efficacy, and improved lumen maintenance, said arc tube comprising:

(a) a hermetically sealed and light-emitting body with enclosed cavity, said body having a central portion and opposed ends, said central portion being arched with said arch being uppermost when said arc tube is positioned for horizontal operation, said central portion having two opposed walls forming the upper and lower walls of said arch, said upper wall having a greater degree of curvature than said lower wall, said lower wall having a degree of curvature greater than zero at all points thereon;

(b) a primary electrode sealed in each end of said body, said primary electrodes protruding into said body cavity and being positioned therein such that there is a straight line-of-sight between said electrodes without being impeded by said lower wall of said arch of said body;

(c) a fill within said body cavity, said fill being an electric-arc generating and sustaining medium; and

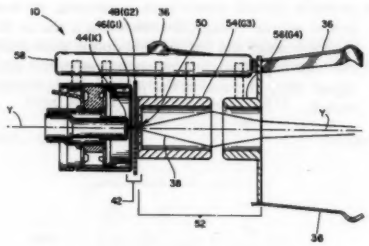
(d) an arc discharge extending between said primary electrodes during full operating temperature and pressure, said arc discharge assuming an arched position substantially parallel to said upper wall, said arc discharge being the sole light-producing means within said arc tube.

4,498,028

ULTRA-SHORT LOBI ELECTRON GUN FOR VERY SHORT CATHODE RAY TUBES

Richard M. Gorski, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 28, 1981, Ser. No. 306,449
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—15 **1 Claim**



1. For use in a very short, high-brightness vehicular cathode ray tube having an associated power supply for developing a predetermined pattern of supply voltages, an ultra-short high-performance electron gun having a series of electrodes aligned on an axis for receiving said voltages to produce a finely focused beam of electrons focused on said screen, said gun comprising:

lower end means having a cathode for developing an electron beam, said lower end means further including:

at least one apertured plate grid electrode for forming, in conjunction with said cathode, said beam;

at least one apertured plate prefocusing electrode for receiving a relatively low prefocusing voltage from said power supply for developing, in conjunction with said grid electrode, a crossover in said beam;

main focus lens means for receiving, focusing and accelerating said beam including:

cylindirical focusing electrode means for receiving a relatively intermediate beam focusing voltage approximating 1700 volts from said power supply for focusing a beam spot of minimum size on said screen, the spacing between said focusing electrode and said prefocusing electrode, and the relative difference in potential therebetween, being effective to develop a weak electrostatic field for forming a steeply expanding beam having an entry angle greater than one hundred milliradians;

cylindrical accelerating electrode means for receiving a relatively high beam accelerating voltage from said power supply for accelerating said electron beam, the ratio of the potentials of said voltage on said accelerating electrode means and the potential on said focusing electrode means being greater than six to one for forming a relatively strong electrostatic field therebetween; said gun electrodes having approximately the following dimensions and spacings:

	Inch
G1 aperture diameter	0.025
G1 thickness, at aperture	0.007
G1–G2 spacing	0.008
G2 thickness, at aperture	0.010
G2 aperture diameter	0.025
G2–G3 spacing	0.010
G3 aperture diameter	0.025
G3 length	0.300
G3 lens diameter	0.148
G3–G4 spacing	0.050
G4 lens diameter	0.148

such that said weak electrostatic field between said prefocusing electrode and said focusing electrode is effective to produce said steeply expanding beam for optimally filling said main focus lens means, and said relatively strong electrostatic field between said focusing electrode means and said accelerating electrode means is effective to produce a finely focused electron beam notwithstanding the ultra-short length of said gun.

4,498,029

MICROWAVE GENERATED PLASMA LIGHT SOURCE APPARATUS

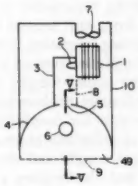
Kenji Yoshizawa; Hitoshi Kodama; Yoshibumi Minowa; Hirotsugu Komura, all of Hyogo, and Hiroshi Ito, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 242,075, Mar. 9, 1981, abandoned. This application Jul. 2, 1984, Ser. No. 625,565

Claims priority, application Japan, Mar. 10, 1980, 55-29911

Int. Cl.³ H01J *7/46, 19/80*

U.S. Cl. 315—39 **15 Claims**



1. A microwave generated plasma light source apparatus comprising: a microwave generator; a microwave cavity having a light reflecting member forming at least a portion of said cavity, said microwave generator being coupled through a feeding opening in said cavity to said cavity; a member transparent to light and opaque to microwaves disposed across an opening of said cavity opposite said feeding opening; a waveguide for guiding microwaves generated by said microwave generator to said feeding opening of said cavity; and an electrodeless discharge bulb disposed at a position in said cavity such that said cavity operates as a resonant cavity at least when said bulb is emitting light, said bulb encapsulating at least one discharge light emissive substance and having a shape and being sufficiently small that said bulb functions substantially as a point light source, said bulb being made of transparent quartz glass and having an inner diameter such that a ratio of an outer surface area of said bulb to the microwave input power is from 1.5 mm^2/W to 15 mm^2/W, the weight of said bulb with respect to the microwave input power being no more than 3.0×10^{-2} g/W, said microwave generator comprising means for generating microwaves intermittently with a rest interval of no more than 5 msec.

4,498,030

HIGH-PRESSURE SODIUM VAPOR DISCHARGE LAMP WITH BIMETALLIC ELEMENT

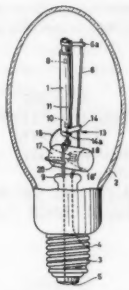
Karel J. Govaerts, and Louis J. Dehouwer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,185

Claims priority, application Netherlands, Dec. 17, 1981, 8105687

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—60 **1 Claim**



1. A high-pressure sodium vapor discharge lamp comprising a discharge vessel having a ceramic wall, first and second main electrodes between which the discharge path extends, a bimetallic switch and a glow starter, said glow starter having a terminal which is connected to a contact point of said bimetallic switch, said glow starter, in the inoperative condition of the lamp, being connected electrically in parallel to said discharge path by means of said bimetallic switch and, in the operative condition of the lamp, being switched off electrically by means of said bimetallic switch, said contact point of said bimetallic switch connected to said terminal of said glow starter being disposed on said wall of said discharge vessel, said discharge vessel comprising an external ignition electrode which, in the inoperative condition of the lamp, engages said discharge vessel for the greater part and which, in the operative condition, is removed from said discharge vessel for the greater part by means of said bimetallic switch.

4,498,031

VARIABLE FREQUENCY CURRENT CONTROL DEVICE FOR DISCHARGE LAMPS

Edward H. Stupp, Spring Valley, N.Y., and Mark W. Fellows, Monroe, Conn., assignors to North American Philips Corporation, New York, N.Y.

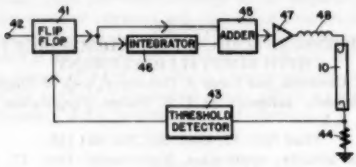
Filed Jan. 3, 1983, Ser. No. 455,395

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—307 **5 Claims**

1. A circuit for controlling a gas discharge lamp comprising, a variable frequency waveform generator having input means for connection to a source of supply voltage, a non-resonant coupling network including a reactive ballast impedance coupled between an output of said waveform generator and said discharge lamp, means responsive to the current flowing through said discharge lamp for monitoring the level of said lamp current, and frequency control means having an input

coupled to said current monitoring means and an output coupled to said waveform generator for supplying a frequency control signal thereto so as to alter the frequency of the waveform generator as a function of the lamp current and in a sense to regulate the lamp current within predetermined limits, wherein said frequency control means comprises a threshold



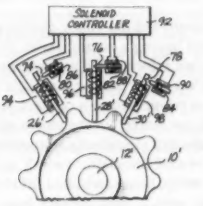
detector for deriving trigger pulses at first and second levels of lamp current, and said waveform generator comprises a trapezoidal waveform generator coupled to the output of the threshold detector for supplying a trapezoidal waveform signal to said ballast impedance and to said discharge lamp connected in series circuit.

4,498,032

HIGH TORQUE DIGITAL STEPPING MOTOR AND CONTROL

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 12, 1982, Ser. No. 397,605
Int. Cl.³ H02K *37/00*
U.S. Cl. 318—37 **19 Claims**



1. A digital command stepping motor, comprising:

a cam mounted for rotation about an axis, said cam having a circular peripheral portion presenting a radially outwardly directed, smoothly undulating cam surface, defined by alternating peak and valley regions;

a set of three linear actuators disposed radially outwardly from said cam surface, each said actuator comprising a radially extending push rod having an end portion in contact with said cam surface, means for forcibly driving its push rod endwise against said cam surface, and means for removing the drive force from its push rod; and

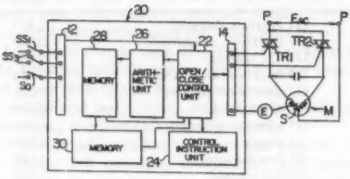
said actuators being spaced relative to said cam surface such that when the push rod of any one actuator is fully extended and in contact with the bottom of a valley region, the push rod of the second actuator is in a partially extended position against a sloping surface between a peak and a valley, and the push rod of the third actuator is in a partially extended position against an oppositely sloping surface between a peak and a valley, so that the cam wheel can be rotated in position in either direction, by operating the actuators to drive the push rod which is in contact with the sloping surface which trails the direction of desired rotation while removing any radially inwardly directed force on the push rods of the other two actuators.

4,498,033

AUTOMATIC DOOR ACTUATOR

Hiroshi Aihara, Suita; Akira Matumura, Ibaraki; Hiroshi Takemura, Neyagawa; Rikiya Kobashi, Amagasaki; Keisuke Satomi, and Hiroe Ishibashi, both of Kobe, all of Japan, assignors to Hokuyo Automatic Co., Ltd., Osaka, Japan

Filed Aug. 5, 1982, Ser. No. 405,702
Claims priority, application Japan, Aug. 11, 1981, 56-126222
Int. Cl.³ H02P *1/04*
U.S. Cl. 318—261 **6 Claims**



1. An automatic door actuator which is energized by an external power supply in response to turning-on of a power switch and which comprises a door, motor means coupled to said door to open and close said door, semiconductor controlled rectifying means for selectively connecting said motor means to the external power supply at a controlled phase angle to control a rotating velocity of said motor means, and control means operable, when activated, to supply a trigger signal at a controlled phase angle to said semiconductor controlled rectifying means to activate said semiconductor controlled rectifying means; wherein said actuator further comprises:

arithmetic means for calculating a weight of said door, distance of movement of said door and braking points of said door through learn control of door actuation which is effected once every time said power switch is turned on and irrespective of the on-off condition of said start switch;

first memory means for storing results of calculation by said arithmetic means;

second memory means for previously storing various phase angles for starting operation, for deceleration braking operation, and for predetermined low velocity control, corresponding to various weights of said door; and

said control means being responsive to said first memory means to read out from said second memory means the phase angles for starting operation, for deceleration braking operation and for predetermined low velocity control corresponding to the actual weight of said door determined in said learn control to thereby supply the trigger signal to said semiconductor controlled rectifying means in accordance with the read-out phase angles corresponding to the actual door weight and the distance of movement of said door and the braking points of said door determined in said learn control.

4,498,034

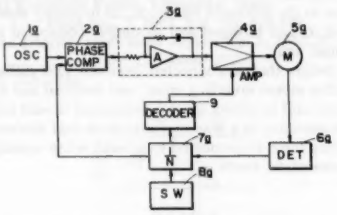
MOTOR SPEED CONTROL CIRCUIT

Masami Shirakawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 948,406, Oct. 4, 1978, abandoned. This application Oct. 29, 1980, Ser. No. 202,061
Claims priority, application Japan, Oct. 11, 1977, 52-121765
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—314 **7 Claims**

1. In combination with an electric motor; a motor speed control circuit comprising a phase-locked loop composed of a plurality of components including means for producing a speed signal having a frequency proportional to the speed of said motor, a frequency-divider operative to divide said speed signal by a selected dividing ratio, a reference oscillator for

supplying a reference oscillating signal, a phase comparator for comparing the phase of said reference oscillating signal to that of the frequency-divided speed signal and to produce an error signal as a function of the phase difference therebetween, filter means for filtering said error signal, and amplifier means for amplifying said filtered error signal to produce a motor control signal, said motor control signal being supplied to said motor; selecting means for selecting the dividing ratio of said frequency divider and thereby select the rotational speed of said



motor; means for producing an output signal corresponding to said selected dividing ratio; and means for supplying said output signal to one of said phase comparator, filter means and amplifier means for varying the gain thereof in accordance with said dividing ratio of the frequency-divider to a value which compensates for changes in the overall gain of said loop resulting from changes in rotational speed of the motor so that said overall gain of said phase-locked loop is maintained substantially constant regardless of said rotational speed of the motor.

4,498,035

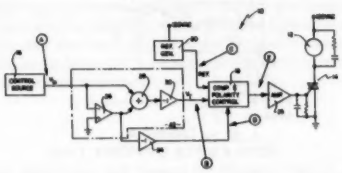
CONTROL CIRCUIT FOR LINEARLY CONTROLLING THE SPEED AND DIRECTION OF AN AC POWERED DC MOTOR IN ACCORDANCE WITH THE MAGNITUDE AND POLARITY OF A DC REFERENCE SIGNAL

Pavlo Bobrek, 11 Potter St., Willimantic, Conn. 06226

Continuation of Ser. No. 219,505, Dec. 23, 1980, abandoned. This application Dec. 15, 1983, Ser. No. 562,037

Int. Cl.³ H02P *5/12*

U.S. Cl. 318—345 D **5 Claims**



1. A control circuit for controlling the speed and direction of an AC powered DC motor in a linear relationship to the magnitude and polarity of a DC reference signal, comprising:

triggerable bidirectional current conducting means adapted to be connected in series with a DC motor across an AC voltage supply source; and

control means for triggering said bidirectional means into conduction for energizing said DC motor at a selected firing angle of said AC source during the positive or negative half cycle thereof in such a way that the firing angle is linearly related to the magnitude and polarity of said DC reference signal, said control means including signal transfer means responsible to said DC reference signal for providing therefrom a DC threshold signal which is always inverted in magnitude but not inverted in polarity relative to said DC reference signal.

4,498,036

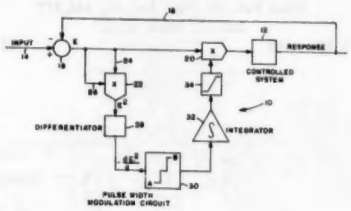
ADAPTIVE CONTROL SYSTEM

Robert M. Salemka, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Aug. 15, 1983, Ser. No. 522,979

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **16 Claims**



1. An adaptive control method for controlling a parameter of a process or mechanism comprising the steps of measuring the value of the parameter, comparing the measured value with a desired value to obtain an error signal, squaring the error signal, taking the time derivative of the error signal squared, comparing the length of time that the time derivative of the error signal squared has a positive value to the length of time the time derivative of the error signal squared has a negative value to obtain a gain control signal, applying the error signal to the system through an amplifier whose gain is controlled by said gain control signal to adjust the parameter desired to be controlled.

4,498,037

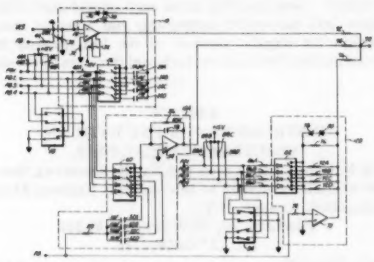
VELOCITY SERVO CONTROLLER

Saeid M. Razavi, St. Paul, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Sep. 22, 1983, Ser. No. 534,801

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **13 Claims**



1. In a two-degree of freedom velocity servo controller for a motor, a compensation network comprising, in combination:

first compensation means connected for receiving an error signal representing a difference between a velocity feedback signal and a velocity command signal and for providing a modified output signal to a summing point;

second compensation means connected for receiving the velocity feedback signal and for providing a modified output signal to the summing point;

bandwidth adjustment means operatively coupled to the first and second compensation means for adjusting the bandwidth of the servo controller without varying a damping factor of the controller; and

damping adjustment means operatively coupled to the second compensation means for adjusting the damping factor

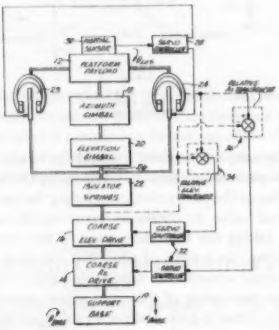
of the servo controller without varying the bandwidth of the controller.

4,498,038

STABILIZATION SYSTEM FOR SOFT-MOUNTED PLATFORM

Richard M. Malueg, 1301 Hidden Springs La., Glendora, Calif. 91740

Filed Feb. 15, 1983, Ser. No. 466,377
Int. Cl.³ B64C *17/02*
U.S. Cl. 318—648 **13 Claims**



1. Apparatus for stabilizing the motion of an inertial load relative to a supporting member, comprising:

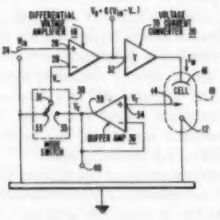
an intermediate frame member, compliant isolation means connecting the intermediate frame member to the supporting member for providing limited translational motion of the intermediate member relative to the supporting member, pivot means connecting the load to the intermediate frame member, the pivot means allowing rotation of the load relative to the intermediate frame member about at least two mutual perpendicular axes of revolution, actuator means connected to the load and to the intermediate frame member for rotating the load relative to the intermediate frame member about each of said axes of revolution, and means for controlling said actuator means to adjust the angular position of the load relative to the intermediate frame about both said two axes of revolution.

4,498,039

INSTRUMENT FOR USE WITH AN ELECTROCHEMICAL CELL

Ronald K. Galwey, Los Gatos, and Kay K. Kanazawa, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,525
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—234 **3 Claims**



3. An instrument for use with an electrochemical cell having a counter electrode, a reference electrode and a grounded working electrode, said instrument operating in either a galvanostatic mode or a potentiostatic mode and comprising:

a terminal connected to an external voltmeter;

differential amplifier means having an inverting input, a non-inverting input connected to an external voltage source and an output;

a voltage to current converter having an input connected to said amplifier means output and an output connected to the counter electrode, said converter having a current output that is linearly proportional to the voltage input;

buffer amplifier means having a non-inverting input connected to the reference electrode, an inverting input connected to said terminal and an output connected to said terminal; and

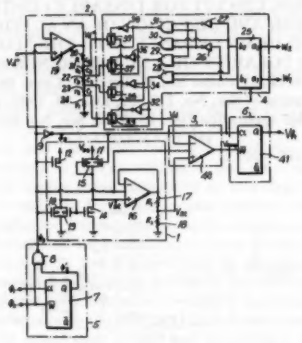
switch means that is connected between said differential amplifier means inverting input, said terminal and ground wherein said inverting input is connected to said terminal when operating in a potentiostatic mode and wherein said inverting input is connected to ground when operating in a galvanostatic mode.

4,498,040

REFERENCE VOLTAGE CIRCUIT

Asakawa Tatsushi, and Morozumi Shinji, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 150,485, May 16, 1980, Pat. No. 4,377,781, which is a continuation of Ser. No. 900,214, Apr. 26, 1978, Pat. No. 4,258,310. This application Nov. 30, 1982, Ser. No. 445,402
Claims priority, application Japan, Apr. 26, 1977, 52-48290; Apr. 26, 1977, 52-48291
The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—299 **8 Claims**



1. A reference voltage circuit to which a source voltage is applied comprising at least first and second pairs of complementary coupled P-channel and N-channel MOS transistors, said P-channel transistors in said first pair being coupled in series with said N-channel transistor in said first pair, said P-channel transistor in said second pair being coupled in series with said N-channel transistor in said second pair, at least one of said transistors in said first pair of complementary coupled P-channel and N-channel transistors having a different threshold voltage than the like polarity transistor in the second pair of complementary coupled P-channel and N-channel transistors, said first and second pairs of complementary coupled P-channel and N-channel MOS transistors defining at least a first predetermined voltage having a magnitude that is related to the difference in threshold voltages between said respective like polarity transistors in said first and second pairs, said predetermined voltage being substantially independent of variations in temperature and minor variations in said source volt-

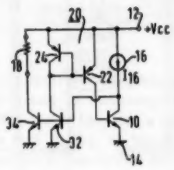
age, said first and second pairs of complementary coupled P-channel and N-channel MOS transistors producing a set reference output voltage at said predetermined voltage in response to said source voltage, said at least first and second pairs of complementary coupled P-channel and N-channel MOS transistors being integrated into a single circuit chip.

4,498,041

CONSTANT CURRENT SOURCE CIRCUIT

Hisao Kuwahara, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 1, 1983, Ser. No. 528,591
Claims priority, application Japan, Sep. 1, 1982, 57-151917
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—316 **6 Claims**



1. A constant current source circuit for providing a current to a load comprising:

a power source voltage supply terminal which is designed to receive a DC power source voltage;

a reference potential terminal;

a current source;

a first transistor connected at its collector to said power source voltage supply terminal via said current source and at its emitter to said reference potential terminal;

a current mirror circuit;

a second transistor connected at its collector to the base of said first transistor via said current mirror circuit and at its emitter to said reference potential terminal, the base of said second transistor being connected to the collector of said first transistor, to effect a closed feedback loop through said second transistor, said mirror circuit and said first transistor for maintaining a constant current to the load; and

a third transistor connected between said power source voltage supply terminal and said reference potential terminal via output terminals to which the load is designed to be connected, the base of said third transistor being connected to be driven by a current proportional to a current of said second transistor.

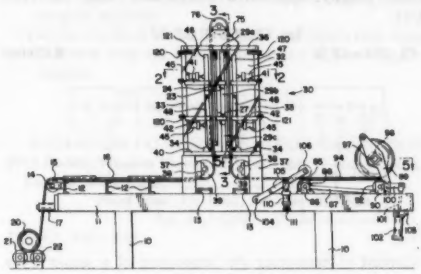
4,498,042

MAT TESTING APPARATUS

Clifford A. Landsness, and Thomas M. Buehrle, both of Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,146
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **9 Claims**

1. An apparatus for the testing of the electrical non-conductivity of an electrically non-conductive matting sheet material comprising support means having a forward portion and a rearward portion, a take-up roll maounted adjacent to said rearward portion of said support means for winding up said matting as said matting is directed thereto, at least a pair of flat electrode plates mounted on said support means intermediate of said forward and rear portions, power operated means mounted on said support means and interconnected to one of said pair of electrode plates for moving said one plate into a closely adjacent position to the other one of said plates to provide a small gap between said plates for testing electrical conductivity of said matting in said gap, means for applying a voltage to said one plate, gauge means connected to said other plate for registering a flow of voltage to said other plate from said one plate, means on said support means for feeding matting sheet material from a supply roll on said forward portion of said support means to between said electrode plates and for



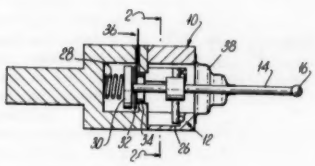
directing said matting material from between said electrode plates to said take-up roll, and at least one of said electrode plates being removably supported to provide the substituting of a different width electrode plate to facilitate the testing of different widths of matting sheet material between said electrode plates.

4,498,043

PROBES FOR MEASURING APPARATUS

Geoffrey L. Heathcote, Cropston, and Alan C. Hollowell, Rothwell, both of England, assignors to The Rank Organisation Limited, London, England

Filed Jun. 23, 1982, Ser. No. 391,350
Claims priority, application United Kingdom, Jun. 23, 1981, 8119369
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 P **8 Claims**



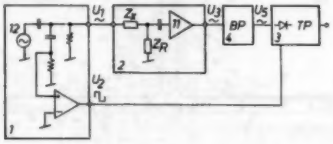
1. Measuring apparatus for detecting at what point in space contact is established between a stylus and a test surface of an object, said apparatus comprising a probe comprising a support, a stylus member having a sensing tip, three spaced seatings on the support defining a stable rest position for the stylus member, means normally urging the stylus member toward said seatings and into said stable rest position, the stylus member being displaced from said stable rest position when the stylus contacts the test surface of the object and being relocated into said stable rest position when contact with the object is broken, a capacitative transducer having a first part carried by the support and a second part carried by the stylus member, and a detector circuit connected to said transducer to detect a change in capacitance due to displacement of the stylus member out of its stable rest position.

4,498,044

METHOD AND CIRCUITRY FOR MEASURING THE IMPEDANCE OF A SENSOR

Petr Horn, Oberhasli, Switzerland, assignor to Novasina AG, Zurich, Switzerland

Filed May 11, 1982, Ser. No. 377,070
Claims priority, application Switzerland, May 18, 1981, 3218/81
Int. Cl.³ G01R 27/02
U.S. Cl. 324—65 R 8 Claims



1. Method of measuring the impedance of a sensor by a sine-shaped AC voltage of defined frequency comprising the steps of

generating a square wave voltage in synchronism with the sine-shaped AC voltage;

applying the sine-shaped AC voltage to a measuring circuit containing said impedance;

modifying the resulting AC voltage proportional to said impedance in a selective circuit of a defined phase-frequency- and amplitude-frequency characteristic, thereby bringing said AC voltage into a defined phase relation to said square wave voltage;

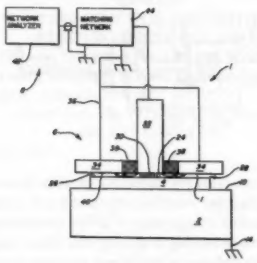
rectifying the modified AC voltage and transforming it into a DC voltage proportional to said impedance in a rectifier- and low-pass circuit, said rectifying and transforming step being affected by intermittently short-circuiting a grounded resistor of said rectifier- and low-pass circuit by means of a switch controlled by said square wave voltage.

4,498,045

APPARATUS AND METHOD FOR DETERMINING SURFACE CONTOUR OF PIEZOELECTRIC WAFERS

Lawrence N. Dworsky, Northbrook, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1982, Ser. No. 382,426
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71.5 19 Claims



1. An apparatus for determining the surface contour of a substantially flat wafer of piezoelectric material having a slight convexity in its opposing faces by measuring a frequency response of the wafer in a plurality of locations, comprising:

a base for supporting the wafer, said base including means for coupling the wafer to ground;

probe means for applying a localized electrical field to a plurality of locations on one face of the wafer; and

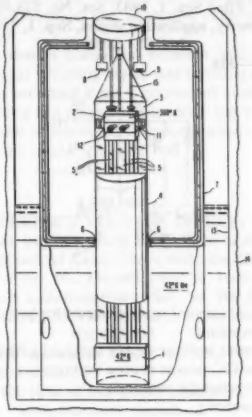
means for measuring the frequency response of the wafer at each of said locations.

4,498,046

ROOM TEMPERATURE CRYOGENIC TEST INTERFACE

Sadeg M. Faris; Paul A. Moskowitz; Arthur Davidson, all of Yorktown Heights, and George A. Sai-Halasz, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1982, Ser. No. 434,770
Int. Cl.³ G01R 5/00; F25B 19/00
U.S. Cl. 324—158 F 6 Claims



1. A test device for a high speed ambient temperature range operating electronic device, having test operating electronics and display devices, a holder for the ambient temperature range operating electronic device, a cryogenic temperature operating sampling device and a holder for the cryogenic temperature operating sampling device in a cryogenic environment, the environment maintained by a dewar,—characterized by—

(a) channel means forming an open pass-through channel between ambient temperature environment and cryogenic environment;

(b) a pass-through plug having two portions complementary for part of the plug length for forming a removable pass-through plug which is operative to seal said channel means to maintain separation between the cryogenic environment and the ambient temperature range environment, which pass-through plug has first and second non-complementary extensions to serve as first and second chip mounting stations;

(c) said pass-through plug having, on at least one of its portions, a planar transmission line of multiple conductors connecting said first chip mounting station to said second chip mounting station;

(d) said pass-through plug having its complementary portions sealable by electrically insulating low heat transfer sealant;

(e) plug sealing means associated with said complementary portions of said pass-through plug to provide a seal for the cryogenic environment with respect to the ambient environment;

(f) electrical connecting means at said first station to connect a cryogenic-temperature-operating chip to said operating electronics and to said planar transmission line; and

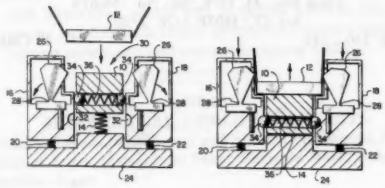
(g) electrical connecting means at said second station to connect an ambient temperature-operating chip temporarily to said operating electronics and to said planar transmission line.

4,498,047

INTEGRATED CIRCUIT MOUNTING APPARATUS

Donald L. Hexamer; Randy D. Spence, both of Dallas, and Johnny Hesselberg, Garland, all of Tex., assignors to Custom Automation Designs, Inc., Garland, Tex.

Filed Nov. 29, 1982, Ser. No. 444,971
Int. Cl.³ G01R *31/02*; H05K *1/02*
U.S. Cl. 324—158 F **13 Claims**



1. An integrated circuit mounting apparatus for utilization in testing integrated circuit devices comprising:

a stage element movable between a first position and a second position and having an upper surface suitable for supporting an integrated circuit device having a plurality of conductive leads disposed along the periphery thereof;

biasing means for urging said stage element into said first position;

restraining means for temporarily restraining said stage element in said second position;

a plurality of conductive elements disposed adjacent to the periphery of said stage element wherein movement of said stage element into said second position will permit said plurality of said conductive elements to contact said plurality of conductive leads at a point above the upper surface of said stage element and wherein movement of said stage element into said first position will permit said integrated circuit device to be lifted from said upper surface of said stage element; and

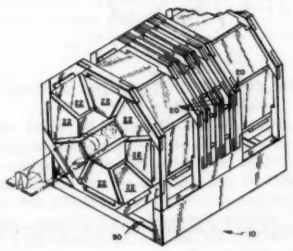
releasing means for selectively releasing said stage element from said second position.

4,498,048

NMR IMAGING APPARATUS

Denny L. Y. Lee, Andover, and Robert D. Hay, Concord, both of Mass., assignors to E. I. Du Pont de Nemours and Company, Inc., Wilmington, Del.

Continuation of Ser. No. 422,370, Sep. 23, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 587,848
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—307 **8 Claims**



1. An NMR imaging apparatus having a desired imaging volume for imaging of biological tissue, said apparatus comprising bias means for generating a bias field, means for generating gradient fields, and radio frequency means for applying a pulse of electromagnetic radiation to the biological tissue and for detecting the resultant signals emitted from said tissue;

wherein said bias means comprises a plurality of dipole ring magnets, each dipole ring magnet comprising a plurality of segments, each segment comprising an oriented, anisotropic permanent magnet material arranged in a ring so that there is a substantially continuous ring of permanent magnet material;

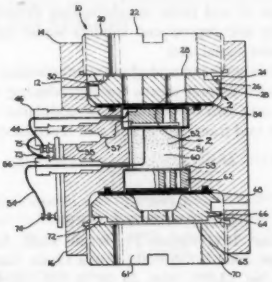
wherein the inner radius of at least one dipole ring magnet is different from the inner radius of an adjacent dipole ring magnet.

4,498,049

RADIATION COMPENSATOR FOR GAS SENSORS

Fred Rudek, Mission Viejo, Calif., assignor to Exo Sensors, Inc., Laguna Hills, Calif.

Filed Mar. 11, 1982, Ser. No. 357,309
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—443 **16 Claims**



1. A device for detecting the partial pressure of a gas within an environment which produces anomalies, comprising:

housing means disposed within the gas;

first electrode means disposed within said housing means;

second electrode means disposed within said housing means;

first connection means coupling said first electrode means to said second electrode means producing a first electrical potential indicative of the partial pressure of the gas to be detected including any environmentally induced anomalies;

third electrode means dispose within said housing means electrically isolated from said first and second electrode means and isolated from the gas to be detected;

second connection means coupling said third electrode means to said first electrode means producing a second electrical potential indicative of environmentally induced anomalies;

whereby when said second potential is subtracted from said first potential, a signal representative of the partial pressure of the gas will be produced.

4,498,050

DEMODULATION DEVICE FOR COMPOSITE PSK-PSK MODULATED WAVES

Yasuharu Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

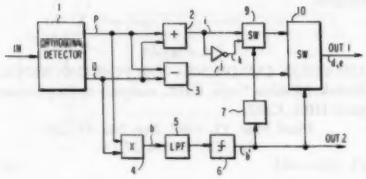
Filed May 4, 1983, Ser. No. 491,487
Claims priority, application Japan, May 7, 1982, 57-75323
Int. Cl.³ H03D *3/00, 3/06*
U.S. Cl. 329—110 **4 Claims**

1. A demodulating device for demodulating a composite PSK-PSK modulated wave comprising a 2^n-phase (n being a positive integer) PSK modulated wave carrying a main signal and a 2-phase modulated wave carrying a subdata signal having a data rate no faster than that of said main data signal, said subdata signal including a frame signal, comprising:

a phase synchronizing demodulator for providing two orthogonally demodulated signals in response to said composite PSK-PSK modulated wave;

first means connected to said phase synchronizing demodulator for reproducing said subdata signal from said two orthogonally demodulated signals;

second means for extracting said frame signal from the reproduced subdata signal and discriminating the phase



locked state in said phase synchronizing demodulator in response to said reproduced subdata signal and the extracted frame signal; and

third means connected to said phase synchronizing demodulator and said second means for reproducing said main data from said two orthogonally demodulated signals in response to said frame signal and said reproduced subdata signal.

4,498,051

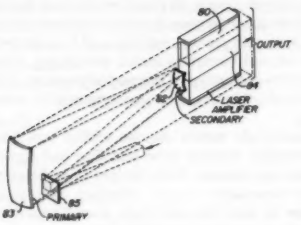
HIGH ENERGY LASER

Robert O. Hunter, 1811 Verano Pl., Irvine, Calif. 92664, and David L. Fried, 5362 S. Ohio St., Yorba Linda, Calif. 92686

Division of Ser. No. 23,987, Mar. 26, 1979, Pat. No. 4,337,437. This application Jul. 9, 1981, Ser. No. 281,638

Int. Cl.³ H01S *3/05, 3/10*

U.S. Cl. 330—4.3 **29 Claims**



1. Process for passing and amplifying discrete pulses of light comprising the step of

providing a first mirror array of discrete mirrors

introducing a series of light pulses at along non-intersecting paths to each said mirror of said first mirror array;

providing a telescope including a primary optic and a secondary optic;

aligning each said mirrors of said first mirror array to each reflect light to said secondary optic for passage through said telescope to said primary along paths which intersect but have differing angularities from the light of all other said paths;

providing a laser amplifier having an amplifying optic path therethrough for amplifying all of said series of light pulses in sequence upon passage through said telescope; and

providing a second scrambler mirror array of discrete mirrors

aligning each said mirror of said second mirror array to direct light from said telescope and amplifier with discrete output paths from one another.

4,498,052

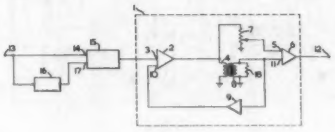
SIGNAL DETECTING CIRCUIT

Noel O. Fothergill, Lerici, Italy, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, London, England

Filed Dec. 23, 1976, Ser. No. 756,613

Int. Cl.³ H03F *1/26, 1/30*

U.S. Cl. 330—149 **13 Claims**



1. A low amplitude signal detecting circuit comprising:

(a) a first operational amplifier having a pair of inputs, including means for applying the signal to be detected to one of the inputs,

(b) a metal core transformer having a pair of windings, one winding being connected to the output of the first operational amplifier,

(c) a second operational amplifier having a pair of inputs, and an output for providing an enhanced output of the signal to be detected;

(d) amplitude control means connecting one of the inputs of the second operational amplifier to the output of the first operational amplifier, and the other of the inputs to the secondary winding of the transformer, and

(e) means for feeding back an A.C. component of the output signal from the operational amplifier from the second winding of the transformer to the second input of the first operational amplifier out of phase with the signal at the first input of the first operational amplifier.

4,498,053

CURRENT AMPLIFIER

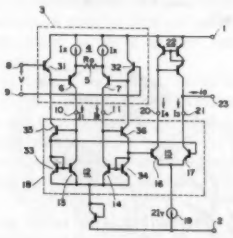
Masayuki Katakura, Yokohama, and Takumi Tenma, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,700

Claims priority, application Japan, Jun. 28, 1982, 57-109753

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—261 **19 Claims**



1. A current amplifier for use with an input voltage comprising:

converting means for converting said input voltage to output currents and including first and second transistors each having base, emitter and collector electrodes, said base electrodes of said first and second transistors being respectively connected to first and second input terminals receiving said input voltage, third and fourth transistors

each having base, emitter and collector electrodes, said base electrodes of said third and fourth transistors being respectively connected to said emitter electrodes of said first and second transistors, each of said third and fourth transistors supplying one of said output currents, resistor means connected between said emitter electrodes of said third and fourth transistors, and bias current means for supplying a bias current to said resistor means; and

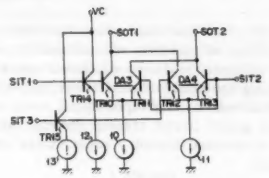
multiplier means for multiplying said output currents from said converting means and including current inverting means and feedback means connected between said converting means and said current inverting means.

4,498,054

DIFFERENTIAL AMPLIFIER CIRCUIT

Hirokazu Fukuda, Yokohama, and Masaru Hashimoto, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 26, 1983, Ser. No. 526,822
Claims priority, application Japan, Aug. 31, 1982, 57-150987
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—261 **8 Claims**



1. A differential amplifier circuit comprising:

first differential amplifier means having first and second input terminals and an output terminal;

second differential amplifier means having a first input terminal and an output terminal connected to the first input terminal and output terminal of said first differential amplifier means, respectively, and a second input terminal;

first and second current source means respectively connected to said first and second differential amplifier means, for supplying first and second drive currents to said first and second differential amplifier means, the sum of the first and second drive currents being kept constant;

first and second transistors having bases respectively connected to the second input terminals of said respective first and second differential amplifier means;

third and fourth current source means respectively connected to the emitter-collector paths of said first and second transistors, for supplying third and fourth drive currents in a predetermined ratio to said second and first drive currents, respectively.

4,498,055

CIRCUIT ARRANGEMENTS FOR MODIFYING DYNAMIC RANGE

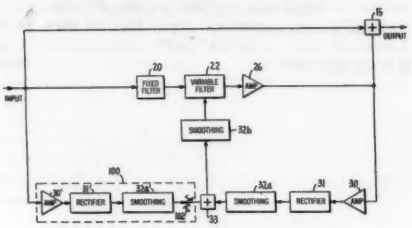
Ray M. Dolby, 50 Walnut St., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 300,741, Sep. 10, 1981, , which is a continuation-in-part of Ser. No. 292,958, Aug. 14, 1981, abandoned, and Ser. No. 275,382, Jun. 19, 1981, abandoned, and Ser. No. 275,205, Jun. 19, 1981, abandoned, and Ser. No. 275,204, Jun. 19, 1981, abandoned, and Ser. No. 180,771, Aug. 22, 1980, abandoned, and Ser. No. 163,950, Jun. 30, 1980, abandoned. This application Dec. 1, 1981, Ser. No. 325,530
Int. Cl.³ H03G *3/30*; H03F *1/26*
U.S. Cl. 330—284 **42 Claims**

1. A circuit arrangement for modifying the dynamic range of an input signal, comprising:

frequency selective circuit means for dividing the frequency spectrum in which the input signal lies into pass-band and stop-band regions, and

dynamic modification means for modifying the dynamic range of signal components in the pass-band region in



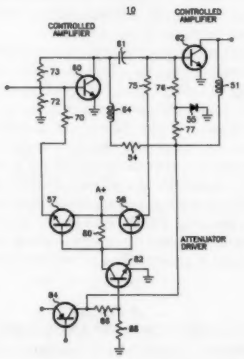
response to signal components lying in the pass-band and stop-band regions, the dynamic modification means being less responsive to stop-band signal components as the level of the input signal rises.

4,498,056

SIGNAL AMPLIFIER AND INTEGRAL SIGNAL SHUNT ATTENUATOR

Peter A. Kwitkowski, and David R. Pacholok, both of Elgin, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1983, Ser. No. 518,232
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—296 **15 Claims**



1. An amplifier and integral signal shunt attenuator, comprising:

an amplifying device normally biased for signal amplification having means for inputting a signal and means for outputting an amplified signal, having a signal transfer impedance between the input and output means, and having a signal shunt impedance across the input means;

means for disabling the amplifying function of the device; and

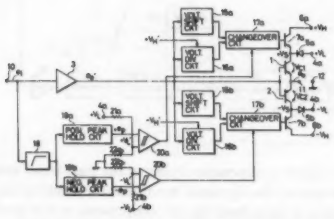
means for rebiasing the device,

whereby the device may be rebiased to lower the shunt impedance with respect to the transfer impedance such that an undesirable signal may no longer be fed-through the transfer impedance but may be substantially shunted across the relatively low shunt impedance.

4,498,057
POWER AMPLIFIER WITH POWER SUPPLY SWITCHING

Masao Noro, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 23, 1982, Ser. No. 452,866
Claims priority, application Japan, Dec. 25, 1981, 56-211480
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—297 **20 Claims**



1. A power amplifier with power supply switching, comprising:

a first amplifying device having a control signal input terminal, a power supply input terminal, and an output terminal, said power supply input terminal being applied with a first power supply voltage;

a second amplifying device having a control signal input terminal, a power supply input terminal, and an output terminal, said power supply input terminal being coupled to a second power supply voltage, whose absolute value is lower in magnitude than an absolute value of said first power supply voltage, via switching means and the output terminal of said first amplifying device, said control signal input terminal being coupled to an input terminal of the amplifier which is applied with an input signal to be amplified, and said output terminal being coupled to a load via an output terminal of the amplifier;

voltage shifting means for shifting a voltage corresponding to said input signal by a first predetermined voltage;

first voltage dividing means for dividing a voltage difference between said voltage corresponding to the input signal and constant voltage having an absolute value greater than said second power supply voltage; and

control means for selectively supplying to the control input terminal of said first amplifying device a shifted output of said voltage shifting means or a divided output of said first voltage dividing means, in response to the magnitude of the frequency of said input signal when the voltage of said input signal is greater than a predetermined value.

4,498,058
LOW INPUT CAPACITANCE AMPLIFIER

Vernal M. Benrud, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,556
Int. Cl.³ H03F *1/38, 3/16*
U.S. Cl. 330—300 **5 Claims**

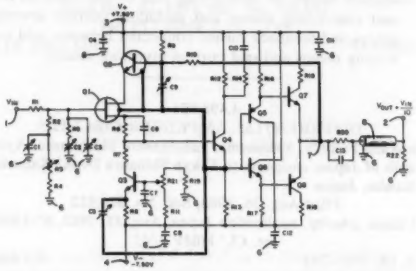
3. In an amplifier apparatus wherein an input signal is received at the gate junction of a field effect transistor operative as a source follower in the drive of next transistor amplifier stages, a method of mitigating the capacitance seen by said input signal which comprises:

positively directly feeding back as direct current a first portion of an amplified said input signal from at least one of said next transistor amplifier stages as a first control signal;

regulating responsively to said first control signal the voltage at the drain of said field effect transistor to be a constant separation from said gate of said field effect transistor, which constant voltage separation is consistent with said operation of said field effect transistor as a source follower; and

directly feeding back as direct current a second portion of the amplified said input signal from at least one of said next transistor amplifier stages to a case of said input field effect transistor;

whereby said constant voltage separation between said gate



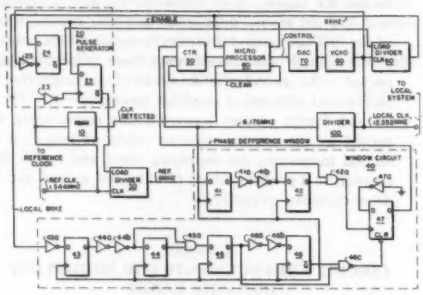
and said drain of said field effect transistor, while said source voltage of said field effect transistor does follow said gate voltage in said source follower operation, results in mitigating the effect of field effect transistor junction capacitances seen by said input signal;

whereby the guard circuit created thereby minimizes the junction to external circuitry capacitances seen by said input signal.

4,498,059
CIRCUIT TO MINIMIZE LOCAL CLOCK FREQUENCY DISTURBANCES WHEN PHASE LOCKING TO A REFERENCE CLOCK CIRCUIT

Ivan L. Edwards, Westmont; Robert C. McLaughlin, Bloomingdale, and Max S. Macrander, Warrenville, all of Ill., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Jun. 23, 1983, Ser. No. 507,437
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—1 A **30 Claims**



1. A clock signal phase locking arrangement for use in a switching system which includes a source of reference clock signals, said phase locking arrangement comprising:

a control circuit operative to provide a plurality of local clock frequency control signals, said control circuit being connected to said reference clock signal source and further operative in response to an absence of said reference clock signals for a predetermined time to maintain the local clock frequency control signal in its current state;

a local clock circuit connected to said control circuit and operative in response to said plurality of local clock frequency control signals to provide a plurality of local clock

signals, each having a frequency associated with a different one of said control signals;

said control circuit being further operative in response to detection of said reference clock signals after said absence to generate first and second synchronization signals;

a first frequency divider connected to said source of reference clock signals and said control circuit, and operative in response to said first synchronization signal to provide counted down reference clock signals of a characteristic frequency;

a second frequency divider connected to said local clock circuit and said control circuit, and operative in response to said second synchronization signal to provide counted down local clock signals of said characteristic frequency; and

a phase difference measurement circuit, connected to said first and second frequency dividers, and said control circuit, and operative in response to said counted down reference clock signals and said counted down local clock signals to provide a phase difference signal representative of the phase difference between each of said counted down reference clock signals and an associated one of said counted down local clock signals;

said control circuit being further operative in response to each of said phase difference signals to provide an associated one of said control signals of a characteristic representative of the duration of said phase difference signal, whereby the frequency of said local clock circuit is adjusted to eliminate the difference in phase between said counted down local clock signals and said counted down reference clock signals.

4,498,060

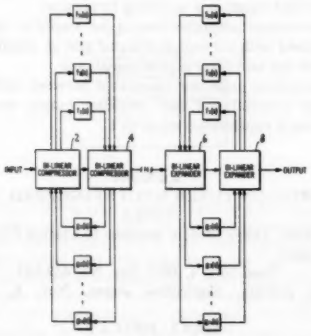
CIRCUIT ARRANGEMENTS FOR MODIFYING DYNAMIC RANGE USING SERIES ARRANGED BI-LINEAR CIRCUITS

Ray M. Dolby, 50 Walnut St., San Francisco, Calif. 94118

Continuation of Ser. No. 325,529, Dec. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 300,741, Sep. 10, 1981, which is a continuation-in-part of Ser. No. 292,958, Aug. 14, 1981, abandoned, and Ser. No. 275,382, Jun. 19, 1981, abandoned, and Ser. No. 275,205, Jun. 19, 1981, abandoned, and Ser. No. 275,204, Jun. 19, 1981, abandoned, and Ser. No. 180,771, Aug. 22, 1980, abandoned, and Ser. No. 163,950, Jun. 30, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,575

Int. Cl.[3] **H04B** *1/64*

U.S. Cl. 333—14 **14 Claims**



8. A circuit for modifying the dynamic range of an input signal, comprising

first circuit means having a characteristic in which only a portion thereof has a changing gain between low and high input levels,

at least one second circuit means which also has such a characteristic within a frequency range common to the circuit means, in series with the first circuit means, the changing gain portions of the characteristics of the circuit means being staggered within a frequency range common to the circuit means such as to provide a change of gain over a wider range of input levels than for any one of the circuit means individually, and an increased difference between the gains at low and high input levels, but with a maximum overall compression or expansion ratio which is substantially no greater than that of any single circuit means, by virtue of the staggering, and

at least one coupling circuit means coupling signal components from one of the circuit means to another of the circuit means for modifying the action of the said other circuit means in response to coupled signal components from said one circuit means.

4,498,061

MICROWAVE RECEIVING DEVICE

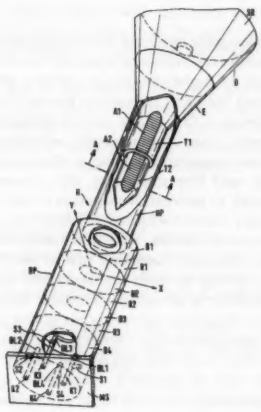
Günther Mörz, Ludwigsburg, and Wilhelm Milcz, Remshalden, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 355,116

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108758

Int. Cl.[3] **H01P** *1/17*; **H01Q** *13/02, 19/19*

U.S. Cl. 333—21 A **22 Claims**

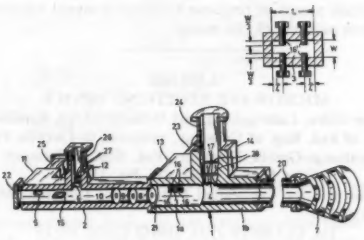


1. In a receiver for counterclockwise and clockwise circularly polarized microwave signals comprising a receiving antenna with a feeder system including a feeder waveguide, a polarization converter for converting received circular to linear polarized signals, a polarization filter and a converter circuit means, connected to the output of said feeder system, for converting the microwave signals of both polarization directions from the high frequency to the intermediate frequency plane; the improvement wherein: a portion of said feeder waveguide belonging to said feeder system of said receiving antenna is a bandpass filter which is effective for both said polarization directions, and a further portion of said feeder waveguide is a highpass filter whose cutoff frequency is such that a sufficiently high stopband isolation exists for the oscillator signal of said converter circuit means; said converter circuit means is disposed on a microstripline substrate whose input is connected with the output of said feeder waveguide; said input of said microstripline substrate comprises means disposed on said substrate for coupling the energies of the waveguide modes of both polarization directions out of said feeder waveguide and into said converter circuit means; and said polarization converter is directly integrated in said feeder waveguide.

4,498,062
WAVEGUIDE STRUCTURE FOR SEPARATING MICROWAVES WITH MUTUALLY ORTHOGONAL PLANES OF POLARIZATION

Piercarlo Massaglia; Enrico Pagana, and Dario Savini, all of Turin, Italy, assignors to Sip - Societa Italiana Per L'Esercizio Telefonico p.A., Turin, Italy

Filed Mar. 25, 1983, Ser. No. 478,864
Claims priority, application Italy, Mar. 25, 1982, 67377 A/82
Int. Cl.³ H01P 1/213, 1/16
U.S. Cl. 333—135 12 Claims



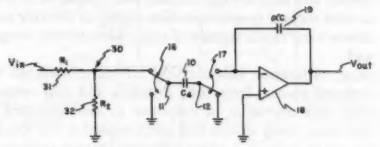
3. A waveguide structure for the separation of linearly polarized microwaves including a pair of lower-frequency carriers and a pair of higher-frequency carriers, the carriers of each pair having mutually orthogonal planes of polarization,

comprising a first and a second orthogonal transducer of circular cross-section axially adjoining each other, said second transducer having a short-circuited end remote from said first transducer and an inner diameter small enough to prevent propagation of said pair of lower-frequency carriers while accommodating said pair of higher-frequency carriers, said first transducer having a mean inner diameter exceeding that of said second transducer and having an open extremity and joining said second transducer at an annular shoulder reflecting said pair of lower-frequency carriers while giving passage to said pair of higher-frequency carriers, said first transducer being provided with first and second axially extending peripheral slots of generally rectangular configuration each longitudinally bisected by an axial plane perpendicular to the plane of polarization of a respective lower-frequency carrier, said first and second slots giving access to a first and a second branch guide of rectangular cross-section enabling propagation of the respective lower-frequency carrier in the TE_{10} mode, said second transducer being provided with third and fourth axially extending peripheral slots of rectangular configuration longitudinally bisected by the axial planes respectively bisecting said first and second slots, said third and fourth slots giving access to a third and a fourth branch guide of rectangular cross-section enabling propagation of a respective higher-frequency carrier, said first and second slots being each partly traversed by conductor means extending over a major portion of the slot width at locations spaced by about one fourth of the slot length from each end thereof for suppressing propagation of the correspondingly polarized higher-frequency carrier in the TE_{20} mode in the respective branch guide, said second slot lying closer to said shoulder than to said first slot, said fourth slot lying closer to said short-circuited end than to said third slot, said first transducer having a portion of enlarged inner diameter extending between said first slot and said shoulder.

4,498,063
SWITCHED CAPACITOR FILTER HAVING A REDUCED CAPACITANCE

Takayoshi Makabe; Yoshiaki Kuraishi; Kenji Nakayama, and Tadakatsu Kimura, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,748
Claims priority, application Japan, Jan. 21, 1982, 57-8202
Int. Cl.³ H03H 19/00, 11/12
U.S. Cl. 333—173 5 Claims



1. A switched capacitor filter comprising voltage dividing means responsive to a filter input signal for producing a filter output signal V_{out}, said filter having a transfer function V_{out}/V_{in} which is specified by a z-transform related to a unit capacitance C and which is given by:

$$V_{out}/V_{in}=1[\alpha z^{4}(1-z^{-1})]$$

where α represents a capacitance ratio determined in relationship to said unit capacitance and z is equal to $e^{j2\pi f/fc}$ and where fc represents a sampling frequency and f represents a frequency of said filter input signal, said filter comprising:

a first resistor having a first resistance of R_1, a first resistor terminal supplied with said filter input signal, and a second resistor terminal;

a second resistor having a second resistance of R_2, a third resistor terminal connected in common to said second resistor terminal, and a fourth resistor terminal to be grounded;

a first capacitor having a first and a second electrode and a first capacitance given by:

$$C(R_1+R_2)/R_2;$$

first switching means connected to said first and said second electrodes for switching said input signal to produce a switched signal at a sampling frequency;

an operational amplifier having an amplifier input signal supplied with sid switched signal and an amplifier output signal for said filter output signal; and

an integrating capacitor connected between said amplifier input terminal and said amplifier output terminal and having a capacitance equal to C.

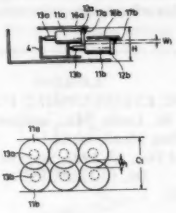
4,498,064
PUSHBUTTON TUNER WITH STAGGERED TUNING COILS

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,112
Claims priority, application Japan, Nov. 6, 1981, 56-164913[U]
Int. Cl.³ H03J 5/32
U.S. Cl. 334—7 4 Claims

1. A pushbutton tuner comprising a plurality of tuning coils supported in a casing and each having a tuning core movable therein for varying the frequency thereof with a terminal board secured to said coils and connected to a circuit board, the improvement of said tuning coils being arranged in vertically-spaced pairs and having horizontally-extending axes with

adjacent coils in respective pairs being in end-to-end relation and having overlapping height portions when viewed from the



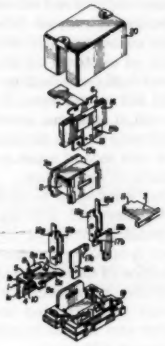
ends of said coils to minimize the space requirement for the coils in the casing.

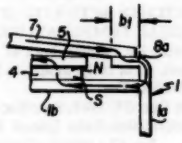
4,498,065

ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, Tsu; Yukio Hashiya, Ise, and Junji Kawaharada, Ichishi, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 15, 1982, Ser. No. 357,818
Claims priority, application Japan, Jul. 22, 1981, 56-114761
Int. Cl.³ H01H *51/22*
U.S. Cl. 335—79 **7 Claims**





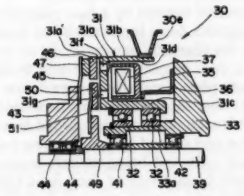
1. An auto-holding type electromagnetic relay comprising:
a main yoke, said main yoke including a perpendicular part and a horizontal part integral with said perpendicular part, said horizontal part extending from one end of said perpendicular part at substantially a right angle to form inner and outer surfaces for each of said respective parts;
a hinge type electromagnet comprising an exciter coil mounted on the inner surface of said perpendicular part, so that said horizontal part extends over said exciter coil;
an iron core inserted in said exciter coil, said iron core being mounted by one of its ends on the inner surface of said perpendicular part;
a permanent magnet having upper and lower surfaces and mounted on the outer surface of said horizontal part by its lower surface such that it is in parallel arrangement with the electromagnet and its magnetic orientation is perpendicular to said horizontal part;
an auxiliary yoke having upper and lower surfaces and mounted by its lower surface on the upper surface of said permanent magnet, the end of said auxiliary yoke furthest from said perpendicular part of said main yoke being adapted to form an armature support;
an "L" shaped armature having an upper end and a lower end and inner and outer surfaces, said armature being pivotably mounted on said armature support by its upper end, the inner surface of the lower end of said armature facing the unmounted end of said iron core;
a contact on the outer surface of said armature;
a main yoke projection extending from the same end of said perpendicular part as said horizontal part and integral therewith, said main yoke projection having a perpendicular projection part extending from and in the same direction as the perpendicular part of said main yoke, and a horizontal projection part extending from the end of said perpendicular projection part furthest from the perpendicular part of said main yoke, said horizontal projection part extending substantially in the same direction as the horizontal part of said main yoke, thus forming substantially a right angle between said horizontal projection part and said perpendicular projection part to form inner and outer surfaces for each of said respective projection parts, said horizontal projection part and said perpendicular projection part being struck from the horizontal part of the main yoke and thus being integral with said main yoke;
an armature projection extending from the upper end of said armature at substantially a right angle and integral therewith;
said armature being so mounted on said auxiliary yoke that said armature projection extends over the outer surface of the horizontal projection part of said main yoke projection and is capable of making contact therewith by pivoting of said armature on said armature support.

4,498,066

ELECTROMAGNETIC DEVICE

Takahisa Fujiwara; Masaaki Narihisa, both of Ise, and Katsuyuki Tamai, Yokohama, all of Japan, assignors to Shinko Electric Co., Ltd. and Isuzu Motors Limited, both of Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,894
Claims priority, application Japan, Sep. 10, 1982, 57-158434
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—281 **5 Claims**



1. An electromagnetic device comprising:
(a) an electromagnet including an electrical coil;
(b) means for selectively applying excitation current to said coil in a higher-magnitude mode and a lower-magnitude mode;
(c) first and second spring-loaded armatures; and
(d) an annular member made of a material of high permeability and having one surface disposed in closely spaced, opposed relation to said coil, said annular member having a pair of radially spaced first and second circumferential magnetic resistance portions, said first and second arma-

tures being disposed in opposed relation to said first and second magnetic resistance portions, respectively, at least one of said first and second magnetic resistance portions being interrupted by circumferentially spaced magnetic bridge portions having such a size as to allow a predetermined amount of magnetic flux to pass therethrough to attract one of said first and second armatures, disposed in opposed relation to the other of said first and second magnetic resistance portions, into contact with the other surface of said annular member when the excitation current of lower magnitude is applied to said coil, said first and second armatures being spaced so closely from the other surface of said annular member that when the excitation current of higher magnitude is applied to said coil, the magnetic flux passes through said first and second armatures, thereby attracting them into contact with the other surface of said annular member.

4,498,067

SMALL-SIZE INDUCTOR

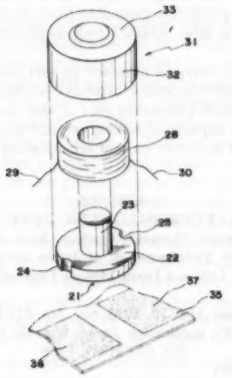
Takashi Kumokawa; Minoru Tamada, both of Yokaichi; Ichiji Shimamoto, and Kiyoko Uda, both of Shiga, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 14, 1982, Ser. No. 434,264

Claims priority, application Japan, Apr. 20, 1981, 56-57230[U]

Int. Cl.³ H01F *15/02, 15/10*

U.S. Cl. 336—65 **10 Claims**



1. A small-size inductor comprising:

a base member defined by a base plate having first and second opposite faces separated by at least one side surface which lies generally perpendicular to said first and second faces, a core projection extending from said first face of said base plate generally perpendicular to said first face, and first and second terminals deposited in a spaced relation with each other on said second face of said base plate, said first and second terminals being located on said second face only and being entirely spaced from the outer periphery of said second face, said base plate having at least first and second recesses formed in its peripheral face, said first and second recesses extending to said first and second terminals, respectively;

a coil mounted on said core projection, said coil having first and second lead wires extending therefrom, said first lead wire extending through said first recess and connected to said first terminal and said second lead wire extending through said second recess and connected to said second terminal; and

a cap member fittingly mounted on said base member to enclose said coil in a cavity defined by said cap member and the base member, said cap member being formed of a metallic magnetic material having a permeability greater than that of said base member, said cap member including a top plate in contact with a top surface of said core projection and further including at least one side wall extending down from said top plate and tightly contacting said at least one side surface along substantially the entire perimeter thereof.

4,498,068

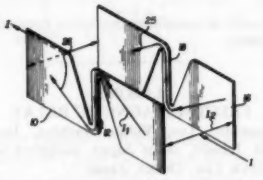
MAGNETIC ARC EXTINGUISHED FUSIBLE ELEMENTS

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Dec. 13, 1982, Ser. No. 448,959

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—293 **12 Claims**



1. A fuse element having electro-magnetic arc extinguishing characteristics, including in combination: bifurcated electrically conductive means; and first and second terminal means at opposite ends, respectively, of said bifurcated electrically conductive means for connecting said bifurcated electrically conductive means into an electrical circuit;

said bifurcated electrically conductive means comprising, between said first and second terminal means, at least one first weak spot and at least one second weak spot, said weak spots comprising fusible material and at least portions of said first and second weak spots being disposed substantially parallel to each other;

said first and second weak spots being arranged such that current flow, between said first and second terminal means, in said parallel portion of one of said first and second weak spots is opposite in direction to current flow in said parallel portion of the other of said first and second weak spots; whereby a magnetic force of repulsion is generated between said first and second weak spots, thereby to lengthen arcs formed in said weak spots by an overcurrent passing therethrough.

4,498,069

ELECTRIC SWITCHES ACTUATED BY BIMETALS FOR ONE OR SEVERAL TEMPERATURES OF RESPONSE

Ciro Calenda; Pietro De Filippis, both of Aversa, and Amedeo Salvatore, Napoli, all of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1982, Ser. No. 453,553

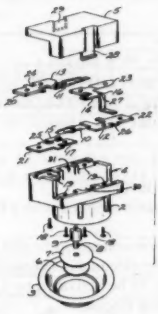
Claims priority, application Italy, Dec. 4, 1981, 49846A/81

Int. Cl.³ H01H *37/52*

U.S. Cl. 337—354 **4 Claims**

1. An electrical switch comprising a base made of a single piece having a first substantially cylindrical part and having an integral second part disposed at one end of the first cylindrical base part, at least one thermally responsive dished bimetallic disk mounted at an opposite end of the first cylindrical base part to move with snap action between original and inverted dished configurations in response to selected changes in temperature, a metal cap fitted over said opposite end of the first cylindrical base part for mounting the disk on the base part to be disposed adjacent an object whose temperature is to be monitored, fixed contact means disposed on said second base part, movable contact means disposed on said second base part to be movable into and out of engagement with said fixed contact means between open and closed circuit positions and to be biased into one of said circuit positions, motion transmit-

ting means slidably mounted for movement along the axis of said first cylindrical base part between the disc and movable contact means for moving said movable contact means to the other of said circuit positions, and rivet means securing the fixed and movable contact means to the second base part, characterized in that the rivet means extend axially through said first cylindrical part of the base, the rivet means having



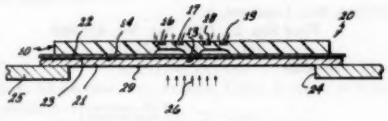
head means at one end securing said fixed and movable contact means to said second base part and the rivet means having head means at an opposite end accommodated in recesses which open into said opposite end of said first cylindrical part of the base under said bimetallic disk in electrically isolated relation to said disc and cap to be protected by the disk and cap to be inaccessible from outside the switch.

4,498,070

SEMI-CONDUCTOR TRANSDUCER AND METHOD OF MAKING THE SAME

Irving R. Lirman, 1516 Palisades Dr., Pacific Palisades, Calif. 90272

Filed Jun. 30, 1983, Ser. No. 509,359
Int. Cl.³ H01C *13/00*; G01L *1/22*
U.S. Cl. 338—42 **16 Claims**



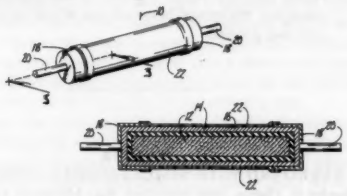
1. A semi-conductor pressure transducer, comprising:
a thin silicon block having substantially parallel, flat upper and lower surfaces;
said lower surface being relieved to define a hemitoroidally-shaped cavity extending partially through said block, the cavity surfaces defining an unrelieved peripheral portion and a generally centrally located push rod, said push rod and said peripheral portion being integral with said block and having outer surfaces which are substantially coplanar;
a plurality of spaced strain gages mounted on said upper surface; and
a thin flat diaphragm of an electrically inert material bonded to the unrelieved portions of the lower surface of said block, said diaphragm electrically isolating said silicon base and said gages from pressure acting on the surface of said diaphragm opposite the surface to which said block is bonded.

4,498,071

HIGH RESISTANCE FILM RESISTOR

Charles T. Plough, Jr., and Ralph D. Hight, both of Norfolk, Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed Sep. 30, 1982, Ser. No. 431,274
Int. Cl.³ H01C *1/012*
U.S. Cl. 338—308 **9 Claims**



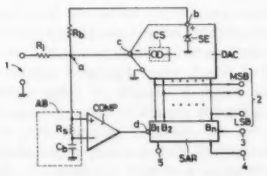
1. A high resistance film resistor comprising:
a ceramic substrate having a supporting surface;
a dielectric film coated on said supporting surface of said substrate, said dielectric film having a rough surface facing away from said substrate and being substantially rougher than said supporting surface of said substrate, said dielectric film being substantially nitride material;
a thin metal film forming a resistance element coated on said rough surface of said dielectric film, said dielectric film providing a barrier against diffusion of impurities from said substrate into said resistance element and providing electrical stability to said resistance element, whereby the sheet resistance of said resistance element is of a value a plurality of times greater than the sheet resistance obtained by placing said thin film directly on said supporting surface of said substrate.

4,498,072

A/D CONVERTER HAVING A SELF-BIAS CIRCUIT

Masaru Moriyama, Yamato, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Jun. 7, 1982, Ser. No. 386,786
Claims priority, application Japan, Jun. 8, 1981, 56-87819
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **7 Claims**



1. An A/D converter comprising:
(a) a comparator for comparing an input analog signal with a reference signal to produce an output signal when said analog signal is greater than said reference signal, said comparator having two input terminals respectively receiving said input analog signal and said reference signal;
(b) a successive approximation register responsive to clock pulses and to said output signal from said comparator for producing a digital signal having a predetermined number of bits;
(c) a D/A converter responsive to said digital signal to produce an output analog signal;
(d) an offset bias circuit for producing a predetermined offset bias voltage;
(e) a summing circuit for supplying said comparator with the summation of said input analog signal, said output analog

signal from said D/A converter and said offset bias voltage; and

(f) a self-bias circuit connected to said two input terminals of said comparator for changing said reference signal in accordance with said summation,

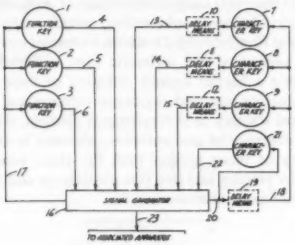
said self-bias circuit comprising a resistor interposed between said two input terminals of said comparator, and a capacitor interposed between one of said two input terminals and ground.

4,498,073

KEYBOARD WITH SIMULTANEOUS OPERATIONS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 400 Prince Arthur, Montreal, Quebec, Canada

Filed Dec. 7, 1983, Ser. No. 559,031
Int. Cl.[3] G08C 9/00
U.S. Cl. 340—365 S **1 Claim**



1. A keyboard which comprises:

a first plurality of keys designated function keys, such as space, shift or delete keys, each of which when depressed by a key-stroke generates and delivers a signal which is capable of being processed and when transmitted is capable of causing associated apparatus to perform the function corresponding to said depressed function key, during a first period of time, following said depression of said function key, having initial and final instants, and

a second plurality of keys designated character keys, such as keys for letters, numerals, punctuation points and symbols, each of which when depressed generates and delivers a signal which is capable of being processed and when transmitted is capable of causing associated apparatus to perform the character corresponding to said depressed character key, during a second period of time, following said depression of said character key, having initial and final instants;

wherein the improvement comprises delay means, which delays delivery of said signals from at least one of said character keys, and

said delay means, having a value of delay which, when one of said function keys is depressed simultaneously with one of said character keys by a first key-stroke, causes said initial instant of said second period of time to occur later than said final instant of said first period of time, and causes said final instant of said second period of time to occur earlier than the initial instant of a signal caused by a second key-stroke, said first and said second key-strokes occurring successively separated by the minimum interval of time permitted in operation of said keyboard with said associated apparatus, and

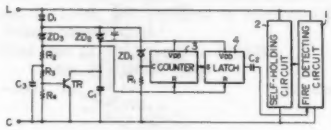
means for generation of said signals from said keys in a form suitable for said associated apparatus.

4,498,074

SELECTIVELY TESTABLE FIRE DETECTOR

Isao Sasaki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,916
Claims priority, application Japan, Feb. 25, 1981, 56-25495
Int. Cl.[3] G08B 29/00
U.S. Cl. 340—514 **6 Claims**



1. A fire detector including:

a fire detecting circuit supplied with a fire voltage through a pair of lines;

a self-holding circuit connected to said lines in parallel with said fire detecting circuit and connected to said fire detecting circuit for it to be activated by an output signal from said fire detecting circuit;

a counter connected between said lines and operative to count pulses superimposed on said first voltage and to provide an output signal upon reaching a pre-set count of said pulses;

a latch circuit connected to said counter and operated by said output signal thereof, said latch circuit having an output connected to said fire detecting circuit to activate said fire detecting circuit upon activation of said latch circuit; and,

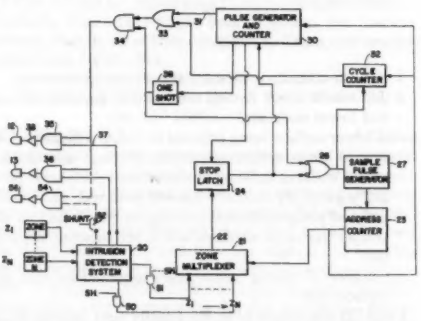
a re-set signal generating circuit connected between said lines and responsive to a voltage higher than said first voltage and said superimposed pulses, said re-set circuit having an output connected to said counter and said latch circuit and which is operative to re-set said counter and said latch circuit upon detection of said higher voltage.

4,498,075

FAULT INDICATOR APPARATUS FOR A MULTI-ZONE INTRUSION SYSTEM

Raymond Gaudio, Maspeth, N.Y., assignor to Napco Security Systems, Inc., Copiague, N.Y.

Filed Sep. 23, 1982, Ser. No. 421,860
Int. Cl.[3] G08B 25/00
U.S. Cl. 340—525 **12 Claims**



10. A method of indicating which ones of a plurality of zones being monitored is providing a status being monitored, comprising the steps of:

(a) providing a signal for all zones being monitored having said status;

(b) providing a number of pulses indicative of an assigned number for each zone;

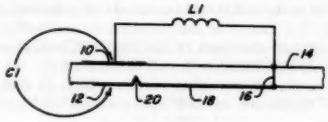
(c) pulsing an indicator ON and OFF according to said number of pulses for each zone in a continuous sequence, whereby said pulsing provides a first number of ON and OFFS for a first zone and a second number of ON and OFFS for another zone and so on with each number of ON and OFFS capable of being physically counted to indicate said zone.

4,498,076

RESONANT TAG AND DEACTIVATOR FOR USE IN AN ELECTRONIC SECURITY SYSTEM

George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Filed May 10, 1982, Ser. No. 376,777
Int. Cl.³ G08B *13/24*
U.S. Cl. 340—572 **25 Claims**



1. For use in an electronic security system which includes means for providing in a controlled area an electromagnetic filed of a frequency which is swept within a predetermined range and means for detecting the presence of a resonant tag circuit having a resonant frequency within said range, a resonant tag circuit comprising:

a planar substrate of dielectric material;

a tuned circuit on said substrate in planar circuit configuration and resonant at said frequency;

said tuned circuit having a pair of conductive areas in alignment on respective opposite surfaces of the substrate to define a capacitor of the tuned circuit;

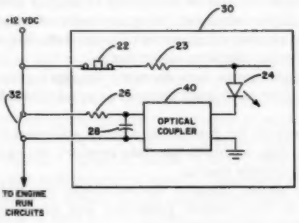
means within the conductive areas defining a path between the conductive areas and through the substrate at which an arc discharge will preferentially occur in response to an electromagnetic field at said frequency of sufficient energy, and operative to destroy the resonant properties of the tuned circuit.

4,498,077

ANNUNCIATOR

Patrick L. Richardson, Los Angeles, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 23, 1983, Ser. No. 497,441
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—648 **4 Claims**



1. Apparatus for providing a persistent indication of the cause of an engine failure/shutdown in an engine having a source of electrical power and a first electrical path containing a plurality of engine safety devices each having a normally closed position in which electric power is conducted and an open position in which the passage of electrical power is blocked comprising:

a normally closed, manually actuated switch means adapted to be connected to the source of electrical power;

a plurality of LED means;

a plurality of optical coupler means each of which has two electrical paths a first one of which is adapted to be connected across one of said engine safety devices and to the source of electrical power to establish a parallel electrical path across the respective engine safety device with the parallel electrical path being shunted when the respective engine safety device is in the closed position; and

circuit means for forming a second electrical path between said switch means and ground and including a plurality of branches each defining an electrical path each of which includes one of said plurality of LED means and a second one of said two electrical paths of one of said plurality of optical coupler means whereby the opening of an engine safety device removes the shunt across said first one of the two electrical paths of the corresponding optical coupler means causing actuation of said corresponding one of said optical coupler means which causes the completion of a circuit containing the corresponding second one of said two electrical paths and the corresponding LED means which lights and remains lit until said switch means are opened.

4,498,078

SEWING MACHINE WITH A VOICE WARNING DEVICE

Motokazu Yoshimura; Michitaka Takiguchi; Fujio Horie, and Koichi Hirata, all of c/o Brother Kogyo Kabushiki Kaisha, 35, 9-chome, Horita-dori, Mizuho-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jan. 4, 1982, Ser. No. 336,944
Claims priority, application Japan, Jan. 23, 1981, 56-9157; Jan. 29, 1981, 56-12032
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—679 **5 Claims**

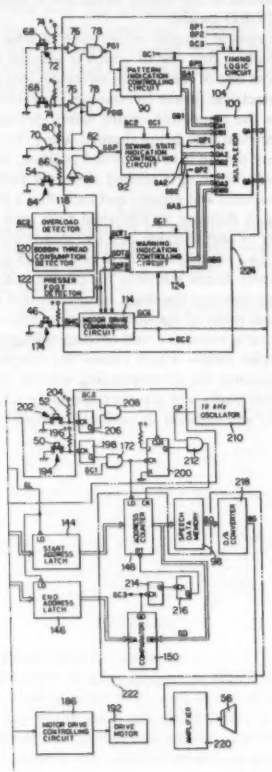
1. A sewing machine having manual means and drive means responsive to the operation of the manual means for actuating stitch forming instrumentalities to form a stitch pattern, said sewing machine comprising:

(a) means for detecting an abnormal condition which prevents the operation of said instrumentalities and then generating a signal;

(b) memory means for permanently storing at least one group of speech data;

(c) means for controlling said memory means to output said

group of speech data in response to the operation of said manual means while said signal is present; and



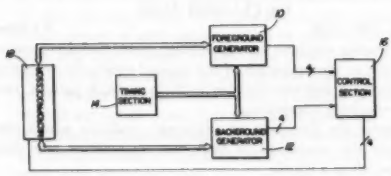
(d) means for speaking a warning statement concerning said abnormal condition responsive to the output of said group of speech data.

4,498,079

PRIORITIZED OVERLAY OF FOREGROUND OBJECTS LINE BUFFER SYSTEM FOR A VIDEO DISPLAY SYSTEM

Atish Ghosh, Glendale Hts., and John Pasierb, Bartlett, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 294,438, Aug. 20, 1981, Pat. No. 4,398,189. This application Aug. 8, 1983, Ser. No. 520,762
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—725 **33 Claims**



1. A video game system comprising:

input means for providing an output signal responsive to an external player provided stimulus;

display means for providing a raster scan video display, comprising a plurality of display lines each having a plurality of display segments, responsive to picture signals;

foreground means for storing object information in a foreground memory in the form of blocks of foreground data, each such block corresponding to a display segment of the video display;

background means for storing background information in background memory in the form of blocks of background data, each such block corresponding to a display segment of the video display;

buffer means for selectively storing foreground data, corresponding to a plurality of adjacent display lines on the monitor screen during active video display of a picture containing one of said adjacent display lines;

selection means for selectively storing object information representing at least two different objects at the same location in the buffer means, overwriting the object information first stored at said location in said buffer means with the non-zero part of the object information stored second in said location in said buffer means;

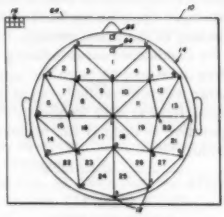
control means for providing picture signals to the display means responsive to said buffer means and said input means.

4,498,080

APPARATUS AND METHOD FOR TOPOGRAPHIC DISPLAY OF MULTICHANNEL DATA

Norman D. Culver, Spotswood, N.J., assignor to Braintech, Inc., South Plainfield, N.J.

Division of Ser. No. 221,830, Dec. 31, 1980, Pat. No. 4,417,591. This application Nov. 17, 1983, Ser. No. 552,502
Int. Cl.³ G09G *1/02*
U.S. Cl. 340—728 **9 Claims**



1. A system for displaying data comprising a source of multichannel input data signals derived from a matrix, signal processing electronic circuitry, and a video display for displaying a topographic map of display data, the topographic display comprising a display matrix of a plurality of display elements, the number of display elements being an order of magnitude greater than the number of channels of input data, the signals processing electronic circuitry comprising:

a digital random access data memory for storing an input data signal from each input channel as an addressable data word;

a pointer generator for generating a set of addresses of predetermined data words in the data memory for each element of the display matrix;

data memory access circuitry for receiving the addresses generated by the pointer generator and accessing the predetermined data words;

a coefficient generator for generaing a predetermined coefficient associated with each data word accessed by the access circuitry; and

a display data generator for multiplying each accessed data word for each element of the display matrix with its associated coefficient and summing the resultant products to

provide a display data signal for that element of the display.

4,498,081

DISPLAY DEVICE FOR DISPLAYING BOTH VIDEO AND GRAPHIC OR CHARACTER IMAGES

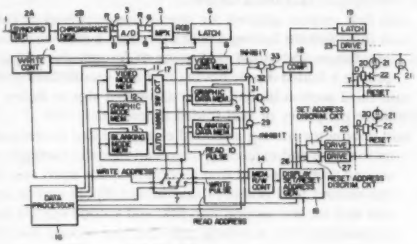
Nobuo Fukushima, and Noriyuki Tomimatsu, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Nagasaki, Japan

PCT No. PCT/JP80/00172, § 371 Date Jul. 20, 1981, § 102(e) Date Jul. 20, 1981, PCT Pub. No. WO82/00557, PCT Pub. Date Feb. 18, 1982

PCT Filed Jul. 25, 1980, Ser. No. 287,757

Int. Cl.³ G09G *3/12*

U.S. Cl. 340—793 **15 Claims**



1. A display device for displaying pictures and graphs on a display board in which a number of display elements are arranged in matrix form, CHARACTERIZED in that said device comprises: a synchronizing separator circuit for separating a composite video signal including synchronizing signals into said synchronizing signals and a video signal of a brightness signal and/or color signals; an analog-to-digital (A/D) converter for converting said video signal into a digital signal; a video data memory for storing said video digital signal provided by said A/D converter, in accordance with said synchronizing signals; a blanking data memory for storing data blocking an output of said video data memory for every display unit; a graphic data memory for storing characters and graphs; a video mode memory, a graphic mode memory and a blanking mode memory for respectively storing data blocking outputs of said video data memory, blanking data memory and graphic data memory for each of a plurality of areas which form the entire area of said display board; a memory controller for controlling the read and write operations of said video data memory, blanking data memory, graphic data memory, video mode memory, graphic mode memory and blanking mode memory; a comparator in which a reference brightness signal in response to a pulse width modulation signal reading timing according to data in each memory is compared with the brightness of a data signal delivered out of each memory and said data signal is modulated into a pulse width modulation signal; and a drive circuit for receiving said pulse width modulation signal, to drive a flip-flop provided for every display unit, so that pictures, characters and graphs are displayed as desired on said display screen.

4,498,082

METHOD AND APPARATUS FOR LOCATING A DISCONTINUITY IN A DATA TRANSMISSION RING

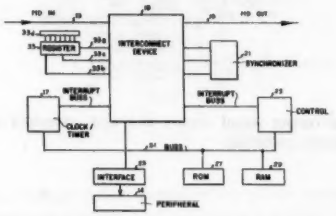
Peter J. Aldridge, Apperley, and Stephen J. Harris, Cheltenham, both of England, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 25, 1982, Ser. No. 342,564

Claims priority, application United Kingdom, Jan. 30, 1981, 8103166

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.16 **16 Claims**



1. A method of locating a discontinuity in a data transmission ring having a plurality of stations randomly receiving and transmitting data along the said ring, comprising the steps of:

(a) sensing the occurrence of valid data and invalid data at said stations,

(b) at said stations, comparing the number of said valid data occurrences to said invalid data occurrences,

(c) producing an invalid data indication, at respective stations, in response to said invalid data occurrences exceeding said valid data occurrences,

(d) at respective stations having said invalid data indication, initiating the transmission of a stream of valid data,

(e) at respective stations receiving said stream of valid data and responsive to said stream of valid data, removing said invalid data indication and at respective stations not receiving said stream of valid data, retaining said invalid data indication,

(f) at said stations retaining said invalid data indication, and responsive to said retained invalid data indication, transmitting the address of said station,

(g) locating said discontinuity relative to the said address of said station.

4,498,083

MULTIPLE INTERFERENCE NULL TRACKING ARRAY ANTENNA

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1983, Ser. No. 480,533

Int. Cl.³ G01S *3/16, 3/28*

U.S. Cl. 343—380 **15 Claims**

1. An array antenna for cancelling undesired signals received thereby, comprising:

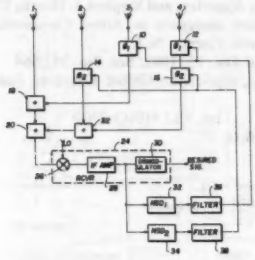
a plurality of antenna elements;

means for varying the phase of signals received by one half of the number of said plurality of antenna elements relative to the other half of said antenna elements in response to a control signal to provide a mutual 180° phase difference between pairs of elements for at least one undesired signal arriving at a certain space angle relative to an axis of said antenna;

receiver means coupled to said antenna elements and including means for detecting and providing an output signal of said undesired signal; and

means responsive to the amplitude of said undesired output signal for generating said control signal whereby said phase varying means varies said phase of said received

signals by said halves of antenna elements until said 180° phase difference is provided and a corresponding null of



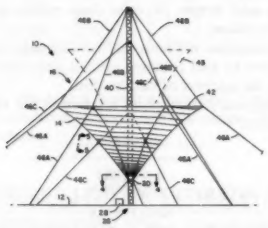
said output signal occurs and said undesired signal is thereby cancelled.

4,498,084

FOUR WIRE DUAL MODE SPIRAL ANTENNA

William L. Werner, Cupertino, and Raymond H. DuHamel, Mountain View, both of Calif., assignors to Granger Associates, Santa Clara, Calif.

Filed Dec. 30, 1982, Ser. No. 454,693
Int. Cl.³ H01Q *1/36, 11/10*
U.S. Cl. 343—792.5 **16 Claims**



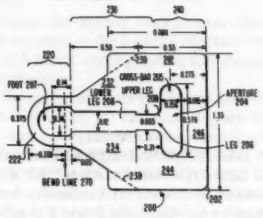
1. An antenna, comprising: first, second, third and fourth wire radiators; means for supporting said radiators in electrically insulated relationship to one another above a horizontal ground plane and around the outer surface of an imaginary inverted cone having its apex located a fixed distance above said plane and its central axis extending vertically upward therefrom, said first, second, third and fourth radiators being supported so as to define successively interlaced first, second, third and fourth conical spiral windings, respectively, beginning at the lowermost ends of the radiators adjacent the apex of said cone, said lowermost ends being circumferentially spaced 90° from each other about said central axis; means for providing first and second alternating currents having the same amplitude and a given frequency but 180° out of phase with one another; and means for simultaneously electrically connecting said first current to the lowermost ends of said first and second radiators and said second current to the lowermost ends of said third and fourth radiators, whereby to cause said radiators to produce a high angle radiation pattern relative to said horizontal ground plane.

4,498,085

FOLDED DIPOLE RADIATING ELEMENT

Alfred Schwarzmann, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,585
Int. Cl.³ H01Q *9/28*
U.S. Cl. 343—795 **12 Claims**



1. A radiation structure for operation over a range of frequencies comprising:

a one piece radiating element in the form of a wide, thin electrical conductor, said conductor having first, second and third sections, said third section being wider than said first section and said second section connecting said first section to said third section;

said first section adapted for connection to a feed circuit;

said third section having a width of about ½ of a wavelength at a frequency within said range of frequencies and comprising a folded dipole having first and second feed points;

said third section having a first elongated slot to define the inner periphery of said folded dipole;

said conductor having a second elongated slot in communication with and extending from said first slot through said second section to said first section to space apart said first and second feed points of said folded dipole and to separate said second section into first and second spaced apart transmission line members, said first and second transmission line members coupling said first section to said feed points of said folded dipole;

said element being free of ground conductors extending parallel to said second and third sections; and

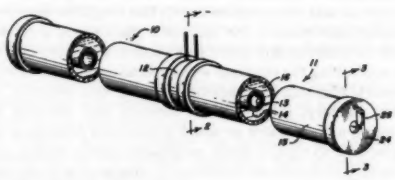
said first slot being less than ½ of a wavelength long at a frequency within said range of frequencies.

4,498,086

BROAD BAND LIQUID LOADED DIPOLE ANTENNA

Sheldon S. Sandler, Lexington, Mass., assignor to Geo-Centers, Inc., Newton Upper Falls, Mass.

Filed Feb. 10, 1983, Ser. No. 465,623
Int. Cl.³ H01Q *9/16*
U.S. Cl. 343—807 **2 Claims**



1. A broad band dipole antenna comprising

(a) a pair of elongate electrically conductive elements having adjacently disposed inner ends,

(b) an insulative sleeve disposed over and substantially coextensive with each of the elongate elements,

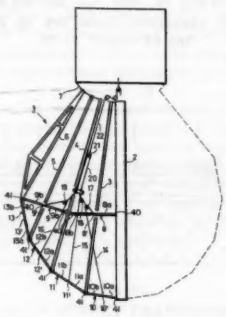
(c) an electrically non-conductive jacket disposed around and substantial coextensive with each of the elongate elements,
(d) an electrically conductive liquid filling the space between the insulative sleeve and the jacket,
(e) an electrically conductive member disposed adjacent the outer end of each elongate element, the electrically conductive member being insulated from the elongate element and in electrical contact with the conductive fluid,
(f) electrically resistive means connected between the outer end of the elongate element and the electrically conductive member and,
(g) means providing external electrical connections to the inner ends of the elongate elements.

4,498,087

APPARATUS FOR UNFOLDING AN ANTENNA NETTING REFLECTOR

Herbert Imbiel, Haar, and Henning Herbig, Holzkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,547
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124907
Int. Cl.³ H01Q *15/20*
U.S. Cl. 343—915 **14 Claims**



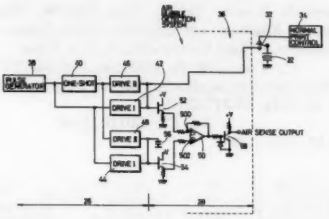
1. An apparatus for unfolding an antenna reflector which is initially in a folded condition, comprising support means (7), a plurality of ribs pivoted to said support means and extending substantially radially outwardly from said support means, lever means (8, 9) each having two lever sections forming a pair and a respective buckling joint (8', 9') operatively interconnecting said lever sections at one end of each lever section for unfolding the corresponding lever means in but one direction, said buckling joints snapping into a locked position when the respective lever means is in a fully stretched out position, pivot means operatively connecting the other end of each lever section to a respective one of said ribs so that two ribs interconnected by a pair of lever sections also form a pair (2, 4; 4, 6) of ribs, block and tackle means including cables (14, 16) and sheaves (17, 19) for guiding said cables, and means operatively connecting said cables to said buckling joints (8', 9') for applying a force to said lever sections for bringing said lever sections into said fully stretched out position, thereby causing an unfolding of said antenna reflector.

4,498,088

INK JET AIR BUBBLE DETECTION

Yoshio Kanayama, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1982, Ser. No. 400,925
Claims priority, application Japan, Jul. 28, 1981, 56-118762
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **4 Claims**



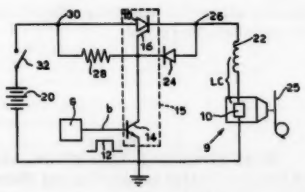
1. In an ink jet system printer of the ink on demand type which includes a printer head comprising a pressure chamber of which one end is provided with an orifice means for emitting ink droplets therethrough, and the other end is connected to an electro-mechanical transducer for suddenly reducing the volume of the pressure chamber for producing droplets, the improvement comprising:
an air bubble detection system for detecting air bubbles contained in ink liquid disposed in said pressure chamber, said air bubble detection system comprising;
drive means for activating said electro-mechanical transducer for creating an initial oscillation in said ink liquid disposed in said pressure chamber;
sensing means for sensing a residual oscillation of said ink liquid after termination of said initial oscillation and for providing an output signal indicating said residual oscillation; and
amplifier means for amplifying said output signal developed from said sensing means.

4,498,089

CONTROL SYSTEM FOR INK JET PRINTING ELEMENT

Alessandro Scardovi, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 15, 1983, Ser. No. 514,304
Claims priority, application Italy, Jul. 16, 1982, 67907 A/82
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **25 Claims**



1. A control system for a selective ink jet printing element operating through a nozzle (7) of a container (3) actuated by a piezoelectric transducer (10), the system comprising an oscillatory circuit (22, 10) including the transducer (10) and an arhythmic pulse generator (G) for selectively exciting the oscillatory circuit, characterised by circuit means (15, 24, 28) causing the oscillatory circuit (22, 10) to generate in response to each exciting pulse (12) a single oscillation wherein both the voltage (V_c) and current (I) value and their derivatives with

respect to time vary continuously, whereby the formation of harmonics in the oscillatory circuit is substantially excluded.

4,498,090

ELECTROSTATIC PRINTING APPARATUS

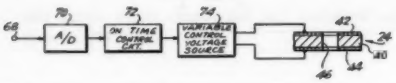
Shigemichi Honda, Tokyo; Akio Hitachi, Inagi; Kiyosuke Suzuki, Kitamoto, and Kiyotaka Dochi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,776

Claims priority, application Japan, Feb. 18, 1981, 56-22392; Feb. 18, 1981, 56-21702[U]

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—159 **6 Claims**



1. Electrostatic printing apparatus of the ion-flow type for printing an image on a record medium in response to an information signal, comprising:

ion generator means for generating ions;

back electrode means for producing a bias potential to cause said generated ions to flow from said ion generator means toward said back electrode means onto said record medium;

means for intermittently advancing said record medium past said back electrode means;

control electrode means interposed between said ion generator means and said record medium for controlling the flow of ions therebetween and including at least one aperture, defined by a surrounding surface, and through which said ions are adapted to flow; and

control signal generator means for supplying a control signal to said control electrode means to cause the latter to produce an electric field substantially parallel to said bias potential in order to direct the flow of said ions through said at least one aperture in a stream substantially out of contact with said surrounding surface, and to control the amount of said ions flowing through each aperture to one of at least three different amounts in response to said information signal, said control signal generator means supplying said control signal to said control electrode means so as to cause the latter to control the time, during each interval when the intermittently advanced record medium is at rest, within which ions flow through each aperture to one of at least three different times in response to said information signal.

4,498,091

HEAT-SENSITIVE RECORDING SHEET

Noboru Yamato; Toshimi Satake; Toshiaki Minami, and Fumio Fujimura, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

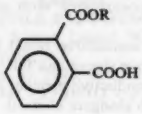
Filed Mar. 15, 1984, Ser. No. 590,199

Claims priority, application Japan, Mar. 15, 1983, 58-41436

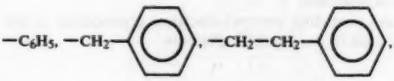
Int. Cl.³ B41M *5/18*

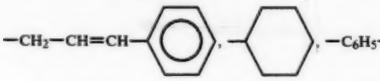
U.S. Cl. 346—216 **6 Claims**

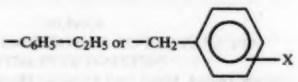
1. Heat-sensitive recording sheet having a color-forming layer comprising (1) a colorless or pale colored chromogenic dyestuff and (2) a color developing material which is a phthalic acid monoester of the general formula:



in which R is a saturated alkyl group of 4 to 20 carbon atoms,







where X is an alkyl group, a halogen or an alkoxy group.

4,498,092

SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

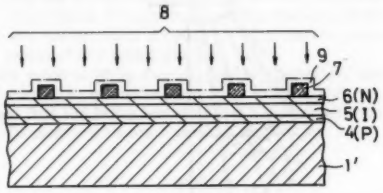
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan

Filed Sep. 14, 1981, Ser. No. 301,595

Claims priority, application Japan, Sep. 16, 1980, 55-128110

Int. Cl.³ H01L *45/00*

U.S. Cl. 357—2 **7 Claims**



1. A semiconductor photoelectric conversion device comprising:

a substrate having a conductive surface; a semiconductor layer laminate member formed on the substrate; and

an electrode connected to the semiconductor layer laminate member in a manner to make an ohmic contact therewith;

wherein the semiconductor layer laminate member is comprised of a P (or N) type first semiconductor layer, an I type second semiconductor layer formed on the first semiconductor layer to define therebetween a PI (or NI) junction, and an N (or P) type third semiconductor layer formed on the second semiconductor layer to define therebetween an NI (or PI) junction, providing a vertical PIN (or NIP) type structure; and

wherein one or more of the first, second and third semiconductor layers are each formed of a mixture of a non-crystalline semiconductor and a microcrystalline semiconductor which is a crystalline semiconductor having a particle size of 5 to 200 Å and is dispersed in the non-crystalline semiconductor with such a distribution of the degree of crystallization that it varies at mean pitches of 5 to 500 Å

and 50 Å to 10μ in the direction of the thickness and the surface of the layer(s), respectively, the mixture being doped with dangling bond neutralizers.

4,498,093

HIGH-POWER III-V SEMICONDUCTOR DEVICE

Christopher L. Allyn, Morristown; Peter G. Flahive, New Providence; David E. Iglesias; Wolfgang O. W. Schlosser, both of Basking Ridge, and Stuart H. Wemple, Chatham Township, Morris County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 14, 1981, Ser. No. 302,030

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **7 Claims**

1. Unipolar semiconductor device for the amplification of an AC electrical signal having a frequency which is here specified in units of gigahertz, which is here designated as f, and which is less than or equal to 25 gigahertz, said device comprising

a supported active layer which consists essentially of a doped III-V semiconductor material,

source means for providing free carriers to a first region of said active layer,

drain means for removing free carriers from a second region of said active layer,

a gate contact on a third region of said active layer, said third region being intermediary to said first region and said second region and said gate contact being for impressing said AC signal on said third region so as to control AC current at said drain means,

said device being characterized in that normalized gate resistance is greater than or equal to 0.75 ohm millimeter between a first point of said gate corresponding to maximum AC current and a second point of said gate corresponding to zero AC current, whereby said device is capable of having, at said drain means, a power output which is greater than or equal to 0.7–0.025f watts per millimeter of total device gate width.

4,498,094

JUNCTION FIELD EFFECT TRANSISTOR HAVING A SUBSTANTIALLY QUADRATIC CHARACTERISTIC

Jacobus Houthoff, and Johannes J. Sips, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 150,269, May 15, 1980, abandoned. This application Jun. 16, 1982, Ser. No. 388,827

Claims priority, application Netherlands, May 29, 1979, 7904200

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **6 Claims**

1. A junction field effect transistor, which comprises:

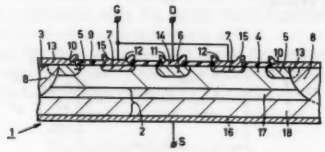
a semiconductor body having a semiconductor substrate of a first conductivity type;

a semiconductor surface region of a second conductivity type opposite to that of the first and located on a first major surface of said substrate;

surface-adjoining source and drain zones of said second conductivity type in said surface region and a channel region of said second conductivity type therebetween;

a surface-adjoining gate region of said first conductivity type in said surface region and between said source and drain zones which forms a rectifying junction with said channel region; and

means for maintaining the value of the quantity β substantially constant over a range of gate-to-source voltage of from zero volts to pinch off, comprising, in combination, a sub-region of the semiconductor substrate of the first



conductivity type located at said first major surface and adjacent said channel region, and having a doping concentration which is less than that of the remainder of said substrate and at most approximately equal to that of the adjacent part of the channel region, and means for electrically connecting said surface-adjoining source zone and the underlying semiconductor substrate.

4,498,095

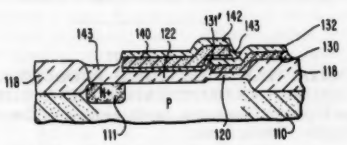
SEMICONDUCTOR STRUCTURE WITH IMPROVED ISOLATION BETWEEN TWO LAYERS OF POLYCRYSTALLINE SILICON

Paul L. Garbarino, Ridgefield, Conn.; Stanley R. Makarewicz, New Windsor, and Joseph F. Shepard, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 902,127, May 2, 1978, Pat. No. 4,251,571. This application Oct. 14, 1980, Ser. No. 196,244

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **3 Claims**



1. A semiconductor field effect device comprising:

a semiconductor substrate having a first region and a second region;

a very thin gate insulating layer having a 250–500 angstrom thickness of silicon dioxide formed on said first and second regions of the substrate;

a first polycrystalline silicon electrode having at least one vertical surface covering the gate insulating oxide layer in said first region;

a composite silicon dioxide insulating layer formed over the oxide in said second region and over said first polycrystalline silicon electrode particularly at the vertical surface(s) of said first polycrystalline silicon electrode providing a sidewall of said composite insulating layer, said composite insulating layer consisting of a second layer of silicon dioxide formed by in situ partial conversion of said first polycrystalline silicon electrode and said thin oxide on said second region of the substrate and a layer of chemical vapor deposited silicon dioxide covering said second layer of silicon dioxide; and

a second polycrystalline silicon electrode formed over the composite silicon dioxide insulating layer overlying said second region and over at least a portion of said composite insulating layer overlying said first electrode.

4,498,096

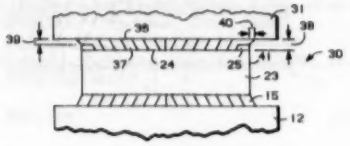
BUTTON RECTIFIER PACKAGE FOR NON-PLANAR DIE

David L. Addie, Chandler, and Kenneth A. Ellsworth, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 229,696, Jan. 30, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,622

Int. Cl.³ H01L 23/48, 29/34, 29/48

U.S. Cl. 357—67 9 Claims



1. An axial lead semiconductor device comprising:

first and second leads having, respectively, substantially planar first and second contact members;

a semiconductor die having first and second faces, with a raised dielectric region of a predetermined height on at least said first face;

solder means having a tensile strength less than 4560 psi (31 MPa) substantially uniformly interconnecting said first face and said substantially planar first contact member;

wherein said solder means extends over a portion of said raised dielectric region and has on said raised dielectric region a first thickness;

wherein said solder means has a second thickness measured between said first face and said first contact member which exceeds said predetermined height of said raised dielectric region by an amount equal to said first thickness; and

attachment means interconnecting said second face and said substantially planar second contact member.

4,498,097

COLOR TELEVISION SIGNAL PRODUCING DEVICE CAPABLE OF COMPENSATING THE COLOR SIGNAL

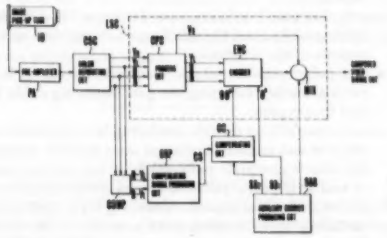
Ryo Fujimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,622

Claims priority, application Japan, Oct. 7, 1981, 56-159956

Int. Cl.³ H04N 9/535

U.S. Cl. 358—12 5 Claims



1. A color television signal producing device comprising:

generating means for generating two auxiliary sub-carriers of the same frequency but having a phase difference of 90° C.;

a carrier color signal producing means for modulating the two sub-carriers with an input color signal into the carrier color signal;

detecting means for detecting a predetermined color phase of said input color signal; and

control means for variably controlling amplitude and/or color phase of the at least one of the carriers in response to the output of said detecting means.

4,498,098

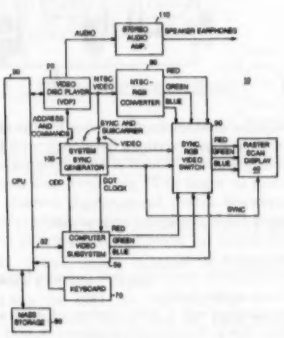
APPARATUS FOR COMBINING A VIDEO SIGNAL WITH GRAPHICS AND TEXT FROM A COMPUTER

Douglas E. Stell, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 2, 1982, Ser. No. 384,439

Int. Cl.³ H04N 9/535

U.S. Cl. 358—22 9 Claims



1. Apparatus for combining video signals from a video source with computer-generated text and graphics signals provided from a computer video output subsystem, for display together, in overlay, on a raster scan video display device, comprising:

A. the video signals containing synchronization signals;

B. means for converting the format of at least one of said video signals and computer-generated text and graphics signals to the non-phase modulated format of the other if both are not already in that format, or to a preselected non-phase modulated format if neither is in a non-phase modulated format;

C. slave synchronization means for generating slave synchronization signals responsive to the synchronization signals contained in the video signals;

D. a video switch connected between the inputs of the display device, on the one hand, and the non-phase modulated versions of the video signals and the computer-generated text and graphics signals, on the other hand, for selectively supplying to the display device, for each pixel, either the video signals or the computer-generated signals; and

E. the slave synchronization signals being supplied to the computer video output subsystem as a clock for controlling the rate and time at which it supplies pixel information to the video switch, and to the video switch to control the time at which it switches between the video signals and the computer-generated signals,

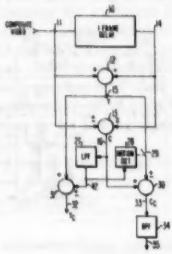
whereby the video switch and the computer video output subsystem are synchronized to the video signals, to track jitter in the video signals and ensure that registration is maintained between the video signals and the computer-generated signals.

4,498,099

APPARATUS FOR FRAME-TO-FRAME COMB FILTERING COMPOSITE TV SIGNAL

Dalton H. Pritchard, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,381
Int. Cl.³ H04N 9/535
U.S. Cl. 358—31 **5 Claims**



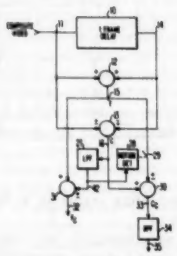
1. A comb filter for processing TV signals comprising:
a delay means for delaying said TV signal by one image period;
first means for combining said TV signal and delayed TV signal from said delay means to produce the sum thereof corresponding substantially to a first component from said TV signal;
second means for combining said TV signal and delayed TV signal from said delay means to produce the difference thereof corresponding substantially to a second component from said TV signal;
filter means having an input terminal coupled to said second means, and having an output terminal, said filter means having a transfer characteristic for substantially rejecting said second component of said TV signal; and
third means for combining the first component of signal with filtered signal from the output terminal of said filter means to correct the first component of signal for errors therein due to interimage motion.

4,498,100

APPARATUS FOR FRAME-TO-FRAME COMB FILTERING COMPOSITE TV SIGNAL

Richard M. Bunting, Cranbury, N.J., and Alfonse Acampora, Staten Island, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,724
Int. Cl.³ H04N 9/535
U.S. Cl. 358—31 **8 Claims**



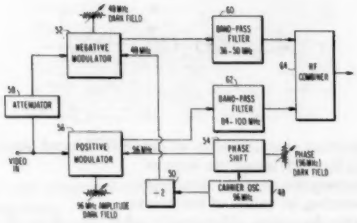
1. A frame-to-frame comb filter for separating chrominance and luminance signal components from a composite video signal to produce comb filtered chrominance and luminance components, improved to correct the combed chrominance component during periods of interframe scene motion; wherein the improvement comprises:
means for detecting interframe scene motion and generating a control signal responsive thereto;
means responsive to said control signal, said comb filtered chrominance component and said combed filtered luminance component for combining the comb filtered luminance component with the comb filtered chrominance component during motion periods; and
means for filtering the combined signal to pass only the chrominance frequency spectrum and produce a motion corrected chrominance signal.

4,498,101

LIGHT VALVE PROJECTION SYSTEM WITH IMPROVED VERTICAL RESOLUTION

Thomas T. True, Camillus; William E. Good, Liverpool, and William C. Bates, Baldwinsville, all of N.Y., assignors to General Electric Company, Portsmouth, Va.

Filed Dec. 22, 1982, Ser. No. 452,162
Int. Cl.³ H04N 9/31
U.S. Cl. 358—62 **8 Claims**



1. Light valve projection apparatus including electron beam means for scanning a raster of orthogonally related diffraction gratings on a light modulating fluid to diffract incident light into different spectral colors for projection onto a viewing surface, said electron beam means including vertical and horizontal deflection means and modulating means connected to said vertical and horizontal deflection means for controlling the depth of the grooves in said diffraction gratings thereby controlling the diffraction of said incident light into different spatial directions and angular deviations permitting control of the color components, said modulating means comprising:
carrier signal generating means for generating a plurality of carrier signals each having a different frequency, the frequency of each carrier signal being higher than any video signal to be reproduced, to diffract light of a predetermined spectral color,
first modulator means connected to receive at least one of said carrier signals and at least one video signal corresponding to at least one predetermined spectral color for modulating the carrier signal with the video signal and applying the modulated signal to said horizontal deflection means,
second modulator means for receiving a second one of said carrier signals and a second video signal corresponding to a second predetermined spectral color for modulating the carrier signal with the video signal and applying the modulated signal to said vertical deflection means, said second one of said carrier signals including a fundamental signal and a phase controlled harmonic signal, said second modulator means positively modulating said harmonic signal and negatively modulating said fundamental signal and combining the modulated harmonic and fundamental signals to produce a resultant modulated signal, the ratio of the positive modulation of said harmonic signal to the

negative modulation of the fundamental signal being different than unity.

4,498,102

METHOD AND APPARATUS FOR A TRANSMISSION SYSTEM FOR TRANSMITTING AN IMAGE AT A REDUCED OUTPUT

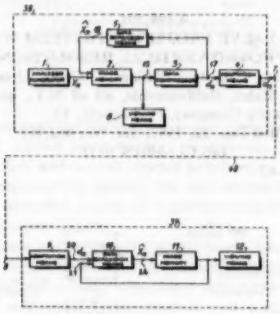
Christian Eichard, and Jean Y. Catros, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 12, 1982, Ser. No. 367,387

Claims priority, application France, Apr. 14, 1981, 81 07458

Int. Cl.³ H04N *1/00*

U.S. Cl. 358—133 **10 Claims**



1. Method of transmitting an image at reduced output comprising for each image the steps of:

analyzing the image in two fields;

numbering its values of luminosity;

coding the values of luminosity other than those of a given sequence by differential coding with temporal inter-field prediction, consisting in coding the value of luminosity of a running point as function of one of the adjacent points belonging to the same line on the one hand, and of adjacent points belonging to the preceding line of the other field of the same image, on the other hand;

coding the values of the given sequence which are intended for initialization of coding and decoding, by another type of coding;

transmitting all coded values;

decoding the coded values intended for initialization by the inverse method of the other type of coding;

decoding the other coded values by the inverse method of differential coding with inter-field prediction;

and resetting an image from the group of decoded values.

4,498,103

SLOW GENLOCK CIRCUIT

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,525

Int. Cl.³ H04N *5/04*; H03L *7/00*

U.S. Cl. 358—148 **4 Claims**

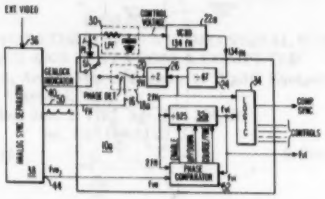
2. Apparatus comprising:

input means for receiving an external synchronization signal;

reference signal generating means for generating a reference signal;

dividing means coupled to said reference signal generating means for frequency dividing said reference signal by a selectable division ratio to produce an internal synchronization signal;

comparing means coupled to said input means and to said dividing means for phase comparing said internal synchronization signal with said external synchronization signal to indicate the presence of phase-lock between said internal synchronization signal and said external synchronization signal, and in the absence of said phase-lock to indicate the magnitude of the phase difference between said internal synchronization signal and said external synchronization signal by a short path, said comparing means including means for setting said selectable division ratio to an initial division ratio during intervals when said presence of phase-lock is indicated, and for changing said selectable division ratio in said dividing means to a second division ratio during intervals when said magnitude exceeds a predetermined amount for providing fast progress towards



locking of said internal synchronization signal to said external synchronization signal, and for changing said selectable division ratio to a third division ratio intermediate said intial and second division ratios during intervals when said magnitude is less than said predetermined amount to slow the locking of said internal synchronization signal to said external synchronization signal until phase locking of said internal synchronization signal to said external synchronization signal is achieved and thereafter changing said division ratio back to said initial division ratio.

4,498,104

METHOD AND APPARATUS FOR CONCEALING ERRORS IN A DIGITAL TELEVISION SIGNAL

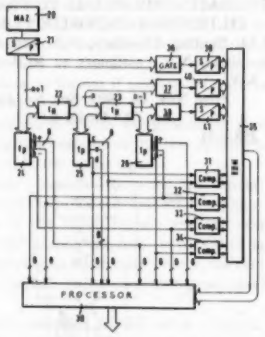
Axel Schulz, Bickenbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,385

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121599

Int. Cl.³ H04N *5/14*

U.S. Cl. 358—160 **6 Claims**



1. Method of concealing errors in a digital video signal comprising the steps of:

making available simultaneously by a signal delay network the value of a digital signal representing a first picture point currently being reproduced and signals representing all the picture points immediately adjacent to said first picture point;

subjecting said signal representing said first picture point to an error detecting test;

at least in the event that said error detecting test detects the presence of error in said signal representing said first picture point, comparing the signal values representing the members of each and every pair adjacently straddling said first picture point, determining in each case whether the members of a pair of said signal values differ by more than a predetermined amount, and providing comparison result signals representative of said determinations;

in the event that said error detecting test detects the presence of an error in said signal representing said first picture point, causing the exclusion from further processing regarding said first picture point of all signals representing picture point pairs found by said comparison and determination step to differ from each other by more than said predetermined amount and then causing the values of signals representative of at least one other pair of said picture points to be averaged together to produce an average value signal, and

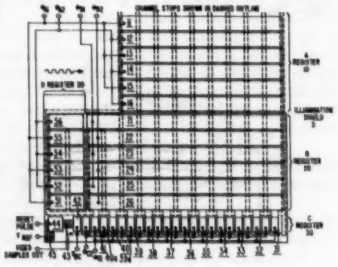
inserting said average value signal in an output digital video signal stream in place of said digital signal representing said first picture point.

4,498,105

FIELD-TRANSFER CCD IMAGERS WITH REFERENCE-BLACK-LEVEL GENERATION CAPABILITY

Delbert D. Crawshaw, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1982, Ser. No. 382,423
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **17 Claims**



1. In a charge-coupled-device imager of the field transfer type, having an A register of parallel charge transfer channels for accumulating packets of charge at pixel sites responsive to the illumination of the charge transfer channels in said A register during integration times, having a B register of parallel charge transfer channels preceded in cascade connection by respective ones of the parallel charge transfer channels in said A register, to which charge transfer channels in the B register said packets of accumulated charge are transferred from said A register during field transfer times between said integration times, and from which charge transfer channels in said B register successive lines of those charge packets are clocked forward a line at a time during said integration times, having a C register functioning as a parallel to serial converter for successive lines of each field as they are clocked forward from the B register, thereby to form a video signal; and having means for shielding the B and C registers from illumination, the improvement for generating a reference-black-level sample in each line of said video signal responsive primarily to integrated dark currents alone and not appreciably to charges generated by photoconversion, comprising:

at least one further charge transfer channel being shielded from illumination, being of equal length with each of the charge transfer channels in said B register, being clocked in synchronism with the charge transfer channels in said B register and having a final stage connected to supply to said C register charge packets representative of said reference-black-level samples which charge packets are generated at least in part by accumulation of dark current in said at least one further charge transfer channel,

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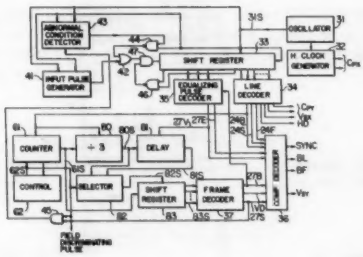
4,498,106

PULSE GENERATOR FOR SOLID-STATE TELEVISION CAMERA

Kazuhiro Sato, Tokyo; Morishi Izumita, Inagi; Kenji Takahashi; Toshiyuki Akiyama, both of Kodaira, and Shigeki Nishizawa, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,420
Claims priority, application Japan, Jul. 29, 1981, 56-117777
Int. Cl.³ H04N *3/12*
U.S. Cl. 358—213 **5 Claims**



1. A pulse generator circuit for a solid-state television camera comprising:

first means for producing pulses of a horizontal scanning frequency, said first means including an oscillator for generating clock pulses, a shift register driven by said clock pulses, said shift register having a number of stages sufficient for dividing a frequency of the clock pulses into the horizontal scanning frequency, said shift register having an output terminal thereof connected with an input terminal thereof so as to form a ring counter circuit, and a pulse generator for generating a pulse to be applied to said input terminal of said shift register for transfer through said shift register;

second means for producing pulse trains of the horizontal scanning frequency for the television camera, said pulse trains being produced in response to a plurality of pulses extracted from the stages of said shift register having frequencies which are the same as the horizontal scanning frequency and phases which are different from each other;

third means for producing pulses for interlace scanning, said third means including a divider circuit for dividing the pulse train of the horizontal scanning frequency obtained from said second means so that said pulse train is alternately divided by two different factors n and n+1 (n being a positive integer), and delay means for delaying said pulse divided by n for one half of the horizontal scanning time period.

4,498,107

DOCUMENT INFORMATION FILING SYSTEM

Tomohisa Yoshimaru, and Kazuki Yamamoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 21, 1981, Ser. No. 256,253
Claims priority, application Japan, Apr. 23, 1980, 55-54054
Int. Cl.³ H04M *1/00*
U.S. Cl. 358—256 **8 Claims**

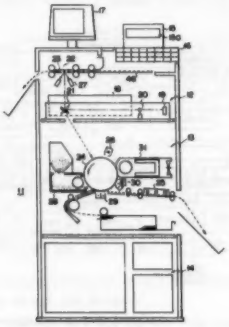
1. A document information filing system comprising:

a keyboard including keys for producing index information and keys for setting operation modes of said filing system;

a scanner for optically scanning a document to be filed and providing image information corresponding thereto;

a video recorder section having associated therewith a removable multi-track recording medium means for recording a plurality of index data and units of document image information individually corresponding to said respective index data, said video recorder section including recording and reproducing means for effecting recording of information on said recording medium means and reproduction of information including index data from said recording medium means;

a control section including a first memory means for storing index data reproduced by said video recorder section and index data to be recorded on said recording medium means, a second memory means for storing names of a



plurality of operation modes of said system and information about the procedures of operation for said operation modes, and means for retrieving index data for desired image information among the index data stored in said first memory means;

a display device for displaying an operation mode name stored in said second memory means and its associated sequential procedure information for a mode set by operation of said keys for setting operation modes;

means for setting a recording and reproducing element of said recording and reproducing means for said video recorder section at a position corresponding to a particular recording medium track of said recording medium means as specified by the index data speciied by said retrieving means; and

means for outputting image information reproduced by said video recorder section one scanning line after another.

4,498,108

SCREEN FOR REPRODUCING CONTINUOUS-TONE PICTURES

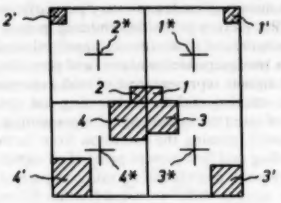
Eckhard Lindemann, Raisdorf, and Wolfgang Neumann, Schleswig, both of Fed. Rep. of Germany, assignors to Dr.-Ing. Rudolf Hell GmbH, Raisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 221,361, Dec. 29, 1980, abandoned, which is a continuation of Ser. No. 962,655, Nov. 21, 1978, abandoned. This application Feb. 14, 1983, Ser. No. 465,904

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—283 **8 Claims**

3. A method of making a 45° screening pattern half-tone reproduction comprising, scanning an original in parallel lines to obtain data indicative of the tonal value at equally spaced regions of the original, forming in the 45° screening pattern in the reproduction a plurality of equally spaced dots of tonal values corresponding to the tonal values of the original by separately forming four adjoining quarter sections of each dot, and while forming each quarter section of a dot, substantially



simultaneously forming a similar quarter section of a diagonally adjacent dot.

4,498,109

PICTURE OUTLINE TRACING AND RECORDING MACHINE

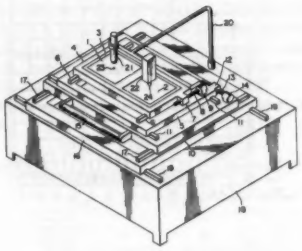
Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Continuation-in-part of Ser. No. 930,382, Aug. 2, 1978, Pat. No. 4,300,170. This application Mar. 3, 1980, Ser. No. 126,439

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—296 **9 Claims**

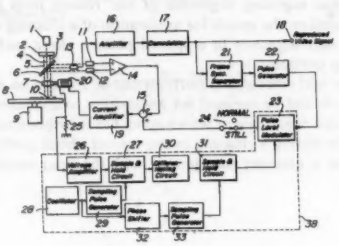


1. A picture outline tracing and recording machine comprising a first support for an original picture having an outline, a second support for a recording medium, an optical head means movably positioned with respect to said first support to receive light from a spot area of said picture and having a plurality of optical detecting elements each positioned to receive light from a different portion of said spot area, said detecting elements providing output signals in response to the reception of light thereby, a processing head means movably positioned with respect to said second support to record an outline on said medium, manually operable means for displacing said processing and optical head means in common with respect to said medium and original respectively, means responsive to said output signals for producing control signals, and second means connected to receive said control signals and responsive thereto for displacing said processing and optical head means in common with respect to said medium and original respectively, whereby the total displacement of said optical head means with respect to said original picture and the total displacement of said processing head means with respect to said medium are the sum of the respective displacements effected by said manually operable means and said second means.

4,498,110
OPTICAL DISC REPRODUCING APPARATUS

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Apr. 16, 1982, Ser. No. 369,087
Claims priority, application Japan, Apr. 23, 1981, 56-60628
Int. Cl.³ H04N *5/85*; G11B *21/10*
U.S. Cl. 358—342 **10 Claims**



1. In an apparatus for reproducing an information signal recorded on an optical disc along spiral or concentric tracks, wherein said apparatus comprises means for emitting a light beam, means for focusing the light beam onto the optical disc as a light spot, means for rotating the optical disc at a given speed, means for receiving light from said disc modulated in accordance with the information signal recorded on said disc to produce a reproduced signal, means responsive to said spot position with respect to a track for detecting a tracking error and producing a tracking error signal, means responsive to said tracking error signal for moving the light spot in a radial direction of the disc to control said tracking error, and means for producing a return signal representing the amount of movement necessary to cause said light spot to trace the same track, said means for moving said light spot in a radial direction of said disc being responsive to said return signal to move said light spot so that it returns to trace said same track, the improvement in said apparatus comprising:

means for detecting the direction and speed of movement of said light spot on said disc in response to said tracking error signal; and

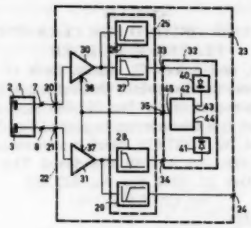
means responsive to said detected direction and speed of said light spot movement for modifying said return signal to cause said light spot to trace the same track.

4,498,111
METHOD AND APPARATUS FOR RECORDING OR REPRODUCING STEREOPHONIC INFORMATION IN A MAGNETIC RECORD CARRIER

Albert M. A. Rijckaert, and Anthonie Walraven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 401,043
Claims priority, application Netherlands, Aug. 17, 1981, 8103834
Int. Cl.³ G11B *5/43*, *5/02*
U.S. Cl. 360—27 **12 Claims**

1. A method of reproducing information recorded in two spaced apart, parallel tracks on a magnetic record carrier on which an auxiliary signal is recorded in each of the tracks and in the area between the tracks, said auxiliary signal having a frequency content outside the frequency range of the information recorded in said tracks, said method comprising the steps of reading each of the tracks with a respective one of a pair of transducers, said transducers each supplying a readout signal having an information component representative of the information and an auxiliary signal component representative of the auxiliary signal read by the respective transducer, separating said information and auxiliary signal components from each of said readout signals so as to obtain a pair of information signals each corresponding to the information read by the respective transducer and a pair of further signals each corresponding to the auxiliary signal read by the respective transducer, and multiplying the amplitude of each of said information signals by a factor corresponding to a constant multiplied by the ratio

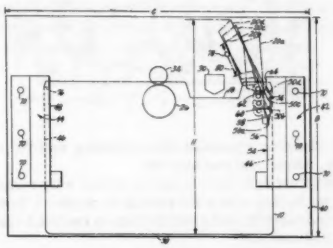


of the amplitude of the larger of said two further signals to the amplitude of the lower of said two further signals so as to compensate for variations of said information components due to tracking errors.

4,498,112
TAPE CARTRIDGE RECEPTACLE

Harold H. Georgens, Rancho Santa Fe, and A. Ray Brokaw, San Diego, both of Calif., assignors to Data Electronics, Inc., San Diego, Calif.

Filed Mar. 22, 1982, Ser. No. 360,696
Int. Cl.³ G11B *15/66*, *23/08*
U.S. Cl. 360—96.5 **19 Claims**



1. A receptacle for receiving a tape cartridge to be inserted into a tape drive unit having a magnetic head, the cartridge having a tape contained in a housing, and a door on the housing for opening to expose a portion of the tape for contact with the head, the door being normally closed under the influence of a return spring and being rotatable against the control spring through an angle to a fully open position in which the tip of the door is farthest from the edge of the cartridge housing most remote from the door, the door also being rotatable to a partially open position in which the angle through which the door has rotated is less than the angle in the fully open position, so the tip of the door is closer to said remote edge of the cartridge housing than when the door is in the fully open position, the receptacle including means for engaging the cartridge housing to guide the cartridge into the receptacle toward the head, and a door control rail for contacting a portion of the door during guided movement of the cartridge along the guide means to rotate the door open against the bias of the door return spring, the door control rail having a front portion for engaging the door sufficiently to rotate it into its fully open position and a rear portion for engaging the door to rotate it into its partially open position during at least a latter portion of the cartridge travel toward the head to allow the cartridge door to clear the head during the latter portion of the cartridge travel and to

retain the door in its partially open position when the tape contacts the head for reducing the overall width of the tape cartridge, compared with the width as measured from the tip of the fully open door to the edge of the cartridge housing most remote from the door.

4,498,113

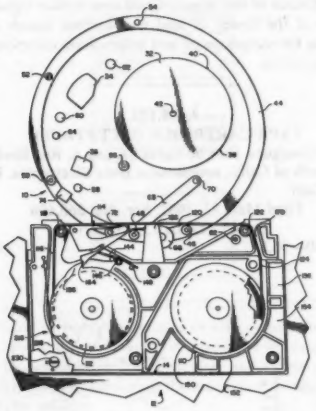
APPARATUS AND METHOD FOR CLEANING A VIDEO PLAYER/RECORDER

Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 253,943, Apr. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 223,025, Jan. 6, 1981, Pat. No. 4,387,411, which is a continuation-in-part of Ser. No. 109,650, Jan. 4, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,333

Int. Cl.³ G11B *5/41*

U.S. Cl. 360—128 **31 Claims**



1. A cleaning apparatus for a playing and/or recording machine, where said machine has:

a. a structure defining a recess to receive a tape cassette, said recess having a forward portion to receive a front portion of said cassette, and a rear portion to receive a rear portion of said cassette;

b. a rotating head member having a curved peripheral surface;

c. a guide means movable between a first nonoperating position and a second operating position, said guide means arranged so that with a tape cassette in the recess, the guide means in moving from the nonoperating to the operating position engages a tape portion positioned along the front portion of the cassette and moves the tape portion outwardly from the cassette into an operating position extending in a curved path along the peripheral surface of the head;

said apparatus comprising:

a. a housing having a front portion, a back portion, first and second side portions, a top wall and a bottom wall, said housing being adapted to be positioned in the recess of the machine;

b. first and second spools rotatably mounted in the first and second side portions of the housing, respectively;

c. a cleaning ribbon having a first end portion connected to said first spool, a main cleaning portion having a front ribbon portion which extends along the front portion of the housing, and a second end portion connected between the main cleaning portion and the second spool, said ribbon having sufficient length so that the ribbon can be wound in a plurality of loop portions around either of said spools, the front ribbon portion being positioned to be engaged by the guide means so as to be extracted by the guide means from the housing to bring the main cleaning portion into cleaning engagement with the rotating head member;

d. first and second access opening means located in said housing proximate to said first and second spools and exposing ribbon loop portions wound on said first and second spools, respectively, each of said access opening means exposing segments of the ribbon loop portions wound on the spools for application of a cleaning solution on said segments in a spaced pattern along said ribbon loop portions;

whereby said ribbon loop portions can be located on either of said spools and be exposed for application of a cleaning solution, so that regardless of which spool has the ribbon unwound therefrom during a cleaning cycle, wetted ribbon portions can be placed in cleaning engagement with the head member.

4,498,114

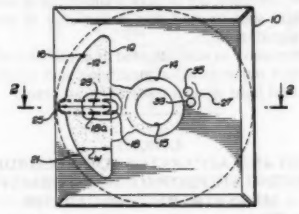
NON-ABRASIVE MAGNETIC HEAD CLEANING SYSTEM

C. Paul Davis, Woodland Hills, Calif., assignor to PerfectData Corporation, Chatsworth, Calif.

Division of Ser. No. 180,963, Aug. 25, 1980, Pat. No. 4,374,404. This application Sep. 13, 1982, Ser. No. 417,228

Int. Cl.³ G11B *5/41*

U.S. Cl. 360—128 **6 Claims**



1. A device for cleaning a magnetic head in flexible disk systems, comprising:

a cleaning disk made of an absorbent and porous material and having a disk surface, and adapted to be saturated with a liquid cleaning fluid; and

a substantially flat jacket rotatably supporting said cleaning disk within its interior, said jacket including an enlarged opening in a side wall of the jacket for facilitating saturation of a substantial portion of the cleaning disk with cleaning fluid while the disk is in said jacket, wherein said opening exposes at least one eighth of the surface of the cleaning disk and is bounded by a straight portion lying along a chord of the cleaning disk and at least one additional portion generally corresponding to the periphery of the cleaning disk, said straight portion being further defined as a chord of a circle whose center coincides with the center of the cleaning disk whereby said straight portion assists in maintaining the disk planar in the area of the opening.

4,498,115
MAGNETIC-TAPE CASSETTE HAVING A CAPSTAN CLEANING DEVICE

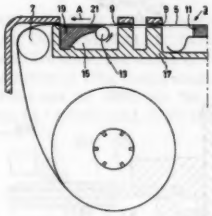
Heinrich Hofmann, Biebertal, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 399,032

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1981, 3130696

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—132 **8 Claims**



1. A magnetic-tape cassette having a device for cleaning the capstan of a magnetic-tape cassette apparatus, comprising:

a housing,

two reel hubs mounted within said housing for rotation, and a length of magnetic recording tape wound on and extending between said reel hubs,

characterized in that the device comprises at least one wiper having a fixed end fixed with respect to the housing, and a free end having a wiping edge, the wiper extending from said fixed to said free ends in a direction opposite the direction of transport of the tape, to a location behind the tape near an area of contact of the magnetic tape with a capstan of a magnetic-tape apparatus into which the cassette has been inserted, said free end having a wiping edge arranged to bear against the capstan which is inserted behind the tape,

said wiper including means for resiliently urging said free end against said capstan with moderate pressure,

whereby capstan cleaning is accomplished during tape recording or playback.

4,498,116
CONTROL OF STATIC NEUTRALIZATION EMPLOYING POSITIVE AND NEGATIVE ION DISTRIBUTOR

Donald G. Saurenman, 6787 Worsham Dr., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 420,904, Sep. 21, 1982, which is a continuation-in-part of Ser. No. 369,925, Apr. 19, 1982, which is a continuation-in-part of Ser. No. 290,423, Aug. 6, 1981, which is a continuation-in-part of Ser. No. 259,503, May 1, 1981, which is a continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980. This application Jan. 16, 1984, Ser. No. 570,926

Int. Cl.³ H05F *3/04*

U.S. Cl. 361—213 **8 Claims**

1. In apparatus for reducing static electricity in a work zone, the combination that includes:

(a) first electrical conductor means having first tips spaced therealong in a first row to dispense positive ions in response to first voltage application to the first conductor means,

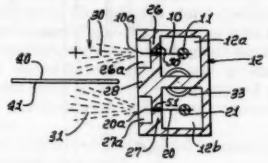
(b) second electrical conductor means having second tips spaced therealong in a second row to dispense negative ions in response to second voltage application to the second conductor means, said first and second voltages being different, and

(c) a body mounting said conductor means at locations and separations from one another characterized in that static electricity at or proximate the work to be treated is effectively reduced to non-objectionable levels when said differential voltages are applied to the conductor means,

(d) the first and second rows being parallel,

(e) the first conductor means including a first conductor having positive voltage applied thereto, and the second conductor means includes a second conductor having negative voltage applied thereto, the conductors located within said body, and including differential voltage sources connected with said conductors,

(f) said body comprising a molded plastic block having a wall defining two rows of openings therein, the conductor means defining two rows of needles on which the tips are formed, the needles penetrating through said openings,



(g) each conductor comprising a flexible cable having a conductive core and a sheath thereon, the needles sidewardly contacting the core, the flexible cables extending in parallel relation outside the body,

(h) the cables in the body extending openly in separate chambers to which pressurized gas is supplied for delivery through said openings, and the needles having ends supported entirely by the flexible cables in said chambers,

(i) there being additional small openings in said wall and between the needle opening locations, for discharging gas between the needles of each row, said additional openings being slightly larger than said needle openings.

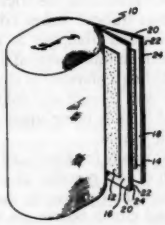
4,498,117
DIELECTRIC FLUID

Gerald A. Voyles, and Vandos Shedigian, both of Indianapolis, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 297,709, Aug. 31, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,234

Int. Cl.³ H01G *4/22*; B05D *5/12*

U.S. Cl. 361—315 **6 Claims**



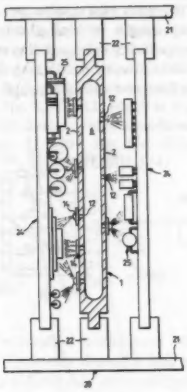
1. In a capacitor, a dielectric fluid including a mixture of a phthalate ester and isopropyl napthalene in an amount which is between 30% and 40% of said dielectric fluid by volume.

4,498,118

CIRCUIT BOARD INSTALLATION

David L. Bell, Winchester, England, assignor to BICC-Vero Electronics Limited, Merseyside, England

Filed Apr. 5, 1983, Ser. No. 482,143
Int. Cl.³ H05K 7/20
U.S. Cl. 361—384 **7 Claims**



1. A circuit board installation comprising a cabinet, at least one rack in the cabinet having opposed guide rails and, slidably mounted in said opposed guide rails, a plurality of circuit boards, wherein at least one substantially flat cooling module is slidably mounted in said opposed guide rails of the rack adjacent at least one circuit board, which cooling module comprises a pair of substantially flat side walls spaced apart and sealed together around their peripheral edges to form a sealed chamber, at least one inlet port in the cooling module connected to a source of pressurised cooling fluid and, in at least one of the side walls, a plurality of orifices through which pressurised cooling fluid is directed towards components of an adjacent circuit board of the installation.

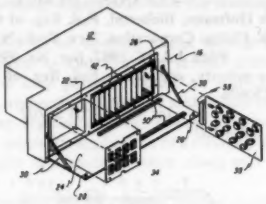
4,498,119

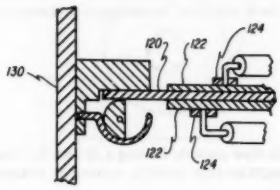
ELECTRONIC CIRCUIT BOARD AND METHOD AND APPARATUS FOR THERMAL MANAGEMENT THEREOF

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Nov. 3, 1980, Ser. No. 203,101
Int. Cl.³ A44B 21/00
U.S. Cl. 361—386 **11 Claims**

1. An electronics enclosure assembly comprising:
a plurality of printed circuit boards having electrical terminals, each of said circuit boards being adapted to carry at least one heat generating electrical circuit component and including heat transfer means comprising a heat sink in electrical isolation from, but in thermal communication with, said at least one electrical circuit component;
a housing including a plurality of electrical terminals carried by the rear wall thereof and cold plate means internally thereof; said housing being adapted to receive said plurality of circuit boards;
first connector means for electrically connecting the terminals of each of said plurality of circuit boards to at least one of the terminals carried by the rear wall of said housing when said circuit boards are inserted in said housing from the front thereof; said first connector means being of the zero insertion force type;
second connector means for thermally connecting the heat transfer means of each of said plurality of circuit boards to the cold plate means of said housing, said second connector means being of the zero insertion force type;





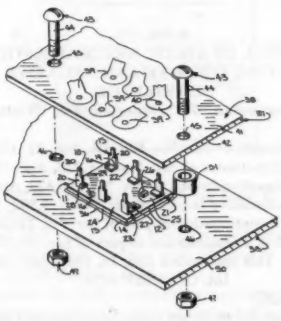
said electrical and said thermal zero insertion force connector means being manually operable from the front of said housing.

4,498,120

ELECTRICAL SUB-ASSEMBLY HAVING A LEAD FRAME TO BE COMPRESSED BETWEEN A CIRCUIT BOARD AND HEAT SINK

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Continuation of Ser. No. 353,175, Mar. 1, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,637
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 **3 Claims**



1. An electrical assembly comprising:
a heat sink;
an electrically insulating and heat conducting substrate mounted on said heat sink;
electrical means mounted on said substrate and generating heat in response to the conduction of current through said electrical means;
a printed circuit board;
mounting means compressively clamping said printed circuit board to said heat sink in spaced relation above said substrate; and
lead frame means operatively connected to said electrical

means and extending between said printed circuit board and said substrate, said lead frame means

(a) spacing said printed circuit board above said substrate,

(b) receiving and transmitting compressive clamping force between said printed circuit board and said substrate and compressively forcing said substrate into intimate engagement with said heat sink to enhance heat transfer from said electrical means to said heat sink, and

(c) conducting current to said electrical means.

4,498,121

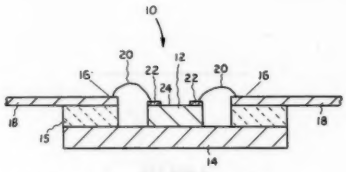
COPPER ALLOYS FOR SUPPRESSING GROWTH OF CU-AL INTERMETALLIC COMPOUNDS

John F. Breedis, Trumbull, and Julius C. Fister, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 13, 1983, Ser. No. 457,605

Int. Cl.³ H01R *4/62, 9/09;* H01B *1/02*

U.S. Cl. 361—401 **10 Claims**



1. A circuit assembly comprising:

a leadwire formed from an aluminum containing material;

a lead frame formed from a copper containing material;

said leadwire and lead frame being bonded together, wherein the improvement comprises:

said lead frame being formed from a copper base alloy consisting essentially of at least about 15% nickel and the balance essentially copper, said copper base alloy suppressing the growth of copper-aluminum intermetallic compounds.

4,498,122

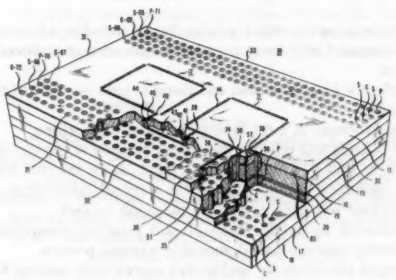
HIGH-SPEED, HIGH PIN-OUT LSI CHIP PACKAGE

Attilio J. Rainal, Convent Station, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1982, Ser. No. 454,197

Int. Cl.³ H05K *1/14*

U.S. Cl. 361—414 **11 Claims**



1. A multilayer, high-speed, high pin-out integrated circuit chip package comprising

plural dielectric layers,

plural signal, ground, and power contacts in contact with at least one of said dielectric layers and arranged for connection to at least one integrated circuit chip,

at least one constant potential ground plane in contact with at least one of said dielectric layers,

at least one constant potential power plane in contact with at least one of said dielectric layers,

at least one signal layer in contact with at least one of said dielectric layers and having plural conductors therethrough, each of said plural conductors having predetermined physical parameters so that the characteristic impedance of said chip package is substantially equal to a predetermined value,

means connecting said ground contacts to said ground plane and means connecting said power contacts to said power plane,

plural signal, ground, and power plated-through holes extending completely through said plural dielectric layers, said constant potential planes and said at least one signal layer, said conductors interconnecting said signal contacts and signal plated-through holes, said ground plated-through holes being connected to said ground plane, and said power plated-through holes being connected to said power plane,

said plated-through holes being adapted for electrical attachment to a circuit pack, and

said power and ground plated-through holes being located substantially symmetrically, and each of said signal plated-through holes being located proximate to a power or ground plated-through hole.

4,498,123

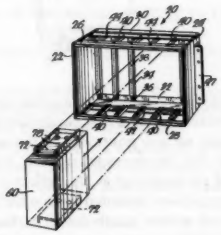
UNIVERSAL CIRCUIT MODULE MOUNTING STRUCTURE

Peter S. Fuss, Glen Ellyn, and Jerry J. Kosner, LaGrange, both of Ill., assignors to Tellabs, Inc., Lisle, Ill.

Filed Mar. 25, 1983, Ser. No. 478,697

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—427 **6 Claims**



1. An improved power supply for being mounted either between a pair of elongate channels spaced apart in parallel relationship or within a circuit module mounting shelf having a plurality of pairs of elongate circuit card guides, each pair of circuit card guides including a first circuit card guide at an upper end of the circuit module mounting shelf extending between a front and a rear end thereof and a second circuit card guide at a lower end of the circuit module mounting shelf extending between the front and rear ends thereof and parallel to the first circuit card guide, each circuit card guide having a longitudinal slot therein and the slots of each pair being in facing relationship, said power supply including a first pair of mounting brackets, each connectable with an associated one of the pair of elongate channels; a second pair of mounting brackets, each connectable with an associated circuit card guide of at least one pair of circuit card guides; and means for detachably securing each mounting bracket of one of said first and second pairs of mounting brackets to respective ones of upper and lower surfaces of said power supply, whereby with said first pair of mounting brackets secured to said power supply

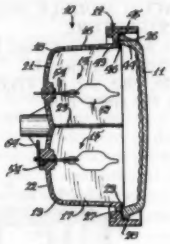
the same is mountable to and between the pair of elongate channels and with said second pair of mounting brackets secured to said power supply the same is mountable to and between at least one pair of circuit card guides in the circuit module mounting shelf, wherein said second pair of mounting brackets includes first and second generally U-shaped brackets each having a generally planar medial portion and a pair of legs extending from opposite sides of said medial portion generally perpendicular thereto and in substantially parallel relationship and said means for detachably securing fastens the medial portion of each said U-shaped bracket to a respective one of said upper and lower power supply supply surfaces with said pairs of legs of said brackets extending outwardly of said power supply, said legs of each said bracket having a spacing therebetween equal to the spacing between the longitudinal slots of adjacent pairs of circuit card guides, whereby said power supply may be mounted in said module mounting shelf by extending said legs into and through the longitudinal slots in an adjacent pair of circuit card guides.

4,498,124

DUAL HALOGEN LAMP ASSEMBLY

William Mayer, and Alton E. Runions, both of Rochester, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Jun. 28, 1982, Ser. No. 392,337
Int. Cl.³ F21M *3/30*
U.S. Cl. 362—211 **8 Claims**



1. A dual halogen bulb rectangular lamp assembly comprising: a reflector having a first paraboloidal surface and a second paraboloidal surface positioned in the same vertical plane and below the first paraboloidal surface, halogen bulb assemblies connected permanently at the reflector in series for simultaneous energization mounted substantially centrally in each of the first and second paraboloidal surfaces of the reflector to reduce the voltage requirements of each bulb assembly, and a lens mounted over the reflector with an unobstructed area between each of the bulb assemblies and the lens.

4,498,125

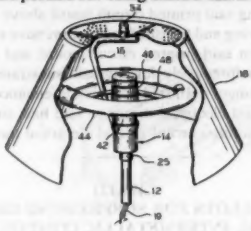
LAMP WITH ONE ARM FORK SUPPORT

Eugene J. Schumaker, Milwaukee, Wis., assignor to Adjustable Fixture Company, Milwaukee, Wis.

Filed Sep. 29, 1982, Ser. No. 427,147
Int. Cl.³ F21S *5/00*
U.S. Cl. 362—216 **6 Claims**

1. A lamp including cup means for being affixed to a support and for enclosing a lamp socket, said cup means having a skirt portion at its upper end,

an arm affixed to said cup means and having an initial portion extending upwardly and outwardly and an upper portion extending inwardly to a terminal portion vertically above the cup means, said arm being forked at its lower end to define portions engaging the opposite sides of said skirt portion for being affixed thereto, and



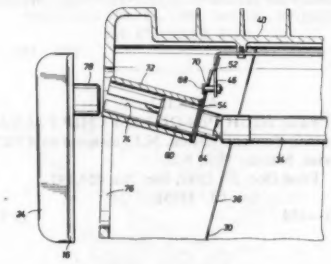
means for affixing a lamp shade to the terminal portion of said arm, said arm being the sole support for said lamp shade.

4,498,126

LIGHTING FIXTURE WITH RELAMPING SOCKET APPARATUS

José A. Hernández, San Marcos, Tex., assignor to Wide-Lite International Corporation, San Marcos, Tex.

Continuation of Ser. No. 273,362, Jun. 15, 1981, abandoned.
This application Oct. 7, 1983, Ser. No. 539,898
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—220 **5 Claims**



1. In combination with a lighting fixture including a housing,

an elongated bulb having socket connections at both ends, and

a reflector located behind and along at least one side of the bulb,

the improvement of a relamping apparatus, comprising

said housing and reflector having an opening in the vicinity of the socket through which a hand can be inserted with a relamping bulb to position the terminal connections of the bulb into their respective receiving sockets,

a receiving socket for each of said terminal connections having a spring-loaded, movable terminal portion,

a hinged mounting for said socket nearest said opening for allowing said socket to swing away with the uncovering of said opening to permit easy relamping, and

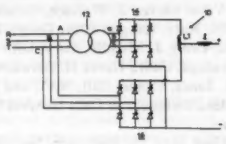
limit means for said mounting to keep said sockets sufficiently close to hold said bulb therebetween without falling out when said hand is removed.

4,498,127

STATIC CONVERTER WITH ELECTRIC VALVES COMPRISING A TWELVE-PHASE CONNECTION WITH TWO GRAETZ BRIDGES FOR THE SUPPRESSION OF HARMONICS 5 AND 7 OF NETWORK CURRENT

Jean-Noël Fiorina, Grenoble, France, assignor to Merlin Gerin, France

Filed Nov. 26, 1982, Ser. No. 444,525
Claims priority, application France, Nov. 30, 1981, 81 22539
Int. Cl.³ H02M 7/155
U.S. Cl. 363—5 **8 Claims**



1. An alternating to direct current static converter including a polyphase rectifier system comprising:

a three-phase transformer having a primary winding with three-phase inputs and a secondary winding with three-phase outputs, said three-phase transformer being constructed and arranged to have predetermined winding connection and phase angle displacement such that a 150 degree phase angle displacement occurs between voltages in each phase of said primary inputs and the corresponding phase of the secondary winding outputs;

a first rectifier bridge having inputs coupled to associated ones of the phase inputs to said primary winding of said transformer and an output;

a second rectifier bridge having inputs coupled to associated ones of the phase outputs of said secondary winding and an output; and

means for coupling the outputs of said first and second rectifier bridges for providing a direct current output, said rectifier bridges being coupled to said three-phase transformer such that alternating voltages applied to the input terminals of said first rectifier bridge from the phase inputs to said primary winding are shifted 30 degrees from the voltages applied to the input terminals of the second rectifier bridge from the phase outputs of said secondary winding.

4,498,128

CURRENT LIMIT CIRCUIT IN SINGLE-ENDED FORWARD CONVERTER UTILIZING CORE RESET TO INITIATE POWER SWITCH CONDUCTION

William A. Peterson, Hanover Township, Morris County, and John C. Sines, South Somerville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

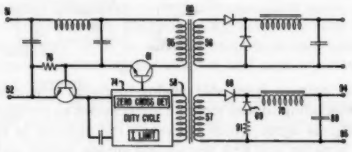
Filed Jul. 7, 1983, Ser. No. 511,525
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 **3 Claims**

1. A forward type converter utilizing core reset techniques for controlling initiation of conduction in a power switch coupling DC voltage to a primary winding of a power transformer comprising:

the power transformer including an output winding and a control winding,

a rectifying diode coupling the output winding to a filter inductor

a flyback current path for the filter inductor operative to conduct current responsive to a filter inductor voltage when the power switch and rectifying diode are nonconducting and connected to shunt a series connection of the output winding and the rectifying diode and also connected to feed current into the filter inductor,



the flyback current path including a flyback diode having its polarity oriented to conduct when the rectifying diode is nonconducting and a current limit control resistive impedance having a impedance magnitude to limit a rate of voltage decay across the output winding during a current overload so that initiation of conduction in the power switch is delayed sufficiently to reduce the current overload,

the impedance magnitude of the current limit control resistive impedance being defined by the equation

$$R_C = (V_X + V_T)\frac{n}{I_{CL}}$$

where

R_C is a resistance of the current limit control resistive impedance,

n is a turns ratio of the control winding to the output winding

I_{CL} is a limit value of current permitted during current overload,

V_X is a voltage value across the control winding, and

V_T is an offset voltage representing a zero cross threshold voltage at which core reset occurs, and

drive means coupled to the control winding to detect occurrence of the zero cross threshold voltage and operative in responsive thereto to initiate a conduction interval of the power switch.

4,498,129

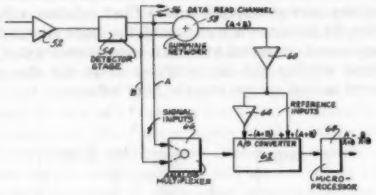
METHOD AND APPARATUS FOR NORMALIZING SERVO-POSITIONING SIGNALS

Juan F. Velazquez, Saline, Mich., assignor to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Filed Jul. 2, 1981, Ser. No. 280,127
Int. Cl.³ G11B 5/54, 21/10
U.S. Cl. 364—174 **12 Claims**

6. Apparatus for producing normalized positioning signals from first and second analog signals which are representative of an actual position in relation to a desired position, said apparatus comprising in combination: analog-to-digital converter means having at least one referencing input terminal and at least one conversion signal input terminal, and having an output terminal; circuit means for separately applying said first and second analog signals to said at least one conversion signal input terminal; circuit means for obtaining and applying a summation of said first and second analog signals to said at least one referencing input terminal during separate applications of said analog signals to said at least one conversion signal

input terminal, such that conversion of each such analog signal input to digital form output occurs in relation to said summation of signals as a reference value; and means for digitally processing in combination the respective reference-converted



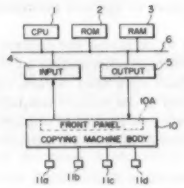
digital outputs from said analog-to-digital converter means corresponding to said separate applications to produce a resultant digital signal which represents the quotient of the difference between said first and second analog signals and the sum of such first and second analog signals.

4,498,130

APPARATUS FOR REMOTELY OPERATING OUTPUT TERMINALS OF A COPYING MACHINE OR THE LIKE DURING SELF-DIAGNOSIS

Hiroyasu Uchida, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,148
Claims priority, application Japan, Aug. 10, 1981, 56-124115
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—188 **14 Claims**



1. An apparatus for operating output means of a copying machine during a diagnosis operating mode, said machine being capable of operating in a normal operating mode and a diagnosis mode, said machine having a controlling front panel, a plurality of said output means coupled to said front panel, said apparatus being of the type having operating means for operating said output means during said diagnosis mode in response to stop and start instruction signals and first control means at said front panel for providing said start and stop instruction signals, the improvement comprising:

second control means providing start and stop instructions signals, said second control means comprising a plurality of control elements each corresponding to a different output means, and each control element being located remote from said front panel and in the vicinity of the output means to which it corresponds; and

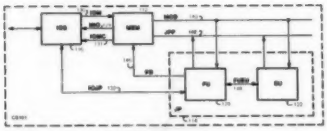
said operating means operating said output means in response to stop and start instruction signals from at least one of said first and second control means.

4,498,131

DATA PROCESSING SYSTEM HAVING ADDRESSING MECHANISMS FOR PROCESSING OBJECT-BASED INFORMATION AND A PROTECTION SCHEME FOR DETERMINING ACCESS RIGHTS TO SUCH INFORMATION

Richard G. Bratt, Wayland; Edward S. Gavrin, Lincoln, both of Mass.; Stephen I. Schleimer, Chapel Hill, N.C.; John F. Pilat; Walter A. Wallach, Jr., both of Raleigh, N.C.; Michael S. Richmond, Pittsboro, N.C.; Richard A. Belgard, Saratoga, Calif.; David A. Farber, Durham, N.C.; John K. Ahlstrom, Mountain View; Steven J. Wallach, Saratoga, both of Calif.; Lawrence H. Katz, Oregon City, Oreg.; Douglas M. Wells, Chapel Hill; Craig J. Mundie, Cary, both of N.C.; Gerald F. Clancy, Saratoga, Calif.; David H. Bernstein, Ashland, Mass.; Thomas M. Jones, Chapel Hill, N.C., and Brett L. Bachman, Boston, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,408
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **2 Claims**



1. In a digital computer system including processor means for performing operations on operands, memory means for storing operands and instructions for directing said operations, said memory means being organized into objects for containing operands and instructions, bus means for conducting operands and instructions between said memory means and said processor means, and I/O means for conducting operands between said digital computer system and devices external to said digital computer system, said processor means comprising:

ALU means connected to said bus means for performing said operations,

addressing means connected to said bus means for providing addresses for controlling the transfer of operands and instructions between said memory means and said processor means, each of said addresses comprising

an object field for identifying an object,

an offset field for specifying a first number of information bits of offset relative to the start of said object, and

a length field for specifying an second number of information bits of said object following said first number of information bits to be transferred between said memory means and said processor means,

and

microcode control means for storing sequences of microinstructions for controlling said processor means and responsive to said instructions for providing said sequences of microinstructions to said processor means,

said ALU means including

general register file means connected to said bus means for storing selected operands and addreses,

said general register file means comprising a plurality of vertically ordered registers vertically divided into three parallel-operating and addresed parts,

a first part of said general register file means comprising first register file means for storing object fields of said addresses,

a second part of said general register file means comprising second register file means for storing offset fields of said addresses and said operands, and

a third part of said general register file means comprising third register file means for storing length field of said addresses, and

address ALU means connected to said general register

file means and to said bus means and responsive to first sequences of microinstructions for performing operations on said addresses,

said objects containing operands as data objects and instructions as procedure objects,

and said processor means including

protection means for preventing a user. currently using said digital computer system to execute a program comprising at least one procedure object, from obtaining unauthorized access to objects of another user, said protection means including

subject number memory means responsive to the operation of said processor means for storing a currently active subject number of a plurality of subject numbers,

each subject number corresponding to and identifying one of a plurality of subjects, each subject comprising the combination of (1) a user of said digital computer system, (2) a process of said digital computer system for executing a procedure of said user, and (3) the type of operation to be performed by said digital computer system in response to an instruction of a procedure of said user, and

said currently active subject number identifies (1) the user currently utilizing said digital computer system, (2) the process currently executing a procedure of said user's program, and (3) the type of operation to be performed by said digital computer system in response to a current instruction of a procedure of said user's program,

protection memory means for storing at least one access control list, each access control list corresponding to an object and comprising at least one access control entry, each access control entry corresponding to a subject having access rights to said object and containing the access rights of said subject to said object, and

access right confirmation means responsive to a currently active subject number and to the operations of said processor means for indexing said protection means in response to a current instruction of a procedure of said user's program when said current instruction requests access to an object and for comparing the access rights of the currently active subject to the access control list associated with said object.

4,498,132

DATA PROCESSING SYSTEM USING OBJECT-BASED INFORMATION AND A PROTECTION SCHEME FOR DETERMINING ACCESS RIGHTS TO SUCH INFORMATION AND USING MULTILEVEL MICROCODE TECHNIQUES

John K. Ahlstrom, Mountain View, Calif.; Brett L. Bachman, Boston, Mass.; Richard A. Belgard, Saratoga, Calif.; David H. Bernstein, Ashland; Richard G. Bratt, Wayland, both of Mass.; Gerald F. Clancy, Saratoga, Calif.; Edward S. Gavrin, Lincoln, Mass.; Ronald H. Gruner, Cary; Thomas M. Jones, Chapel Hill, both of N.C.; Lawrence H. Katz, Oregon City, Oreg.; Craig J. Mundie, Cary, N.C.; Michael S. Richmond, Pittsboro, N.C.; Stephen I. Schleimer, Chapel Hill, N.C.; Steven J. Wallach, Saratoga, Calif.; Walter A. Wallach, Jr., Raleigh, and Douglas M. Wells, Chapel Hill, both of N.C., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,413

Int. Cl.[3] G06F 9/22

U.S. Cl. 364—200 **47 Claims**

34. In a digital computer system including processor means for performing operations on operands and memory means for storing instructions for controlling said processor means, said memory means being organized into objects for containing said operands and instructions, said processor means comprising:

means for uniquely identifying said objects, including

memory organizing means responsive to first instructions for designating locations in said memory means as objects for containing items of information, and

means for generating unique identifier codes, a unique identifier code being uniquely and permanently associated with a corresponding object generated by said processor means,

means for addressing said operands comprising:

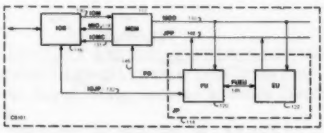
name table means for storing name table entries, each name table entry corresponding to a name of a procedure and each name table entry comprising data resolvable to provide a location in said memory means of an operand referred to by said corresponding name, and

means responsive to said names for resolving each name table entry so as to provide outputs to said memory means representing locations in said memory means of said operands,

protection means for preventing a user, currently using said digital computer system to execute a program comprising a procedure object containing selected instructions, from obtaining unauthorized access to selected objects, including:

subject number memory means responsive to the operation of said processor means for storing a currently active subject number of a plurality of subject numbers,

each subject number corresponding to one of a plurality of subjects wherein each subject comprises the combination of (1) a user of said digital computer system, (2) a process of said digital computer system for executing a procedure of said user, and (3) the type of operation to be performed by said digital computer system in response to an instruction of a procedure of said user, and said currently active subject number identifies the user



currently utilizing said digital computer system, (2) a process currently executing a procedure of said user's program, and (3) the type of operation to be performed by said digital computer system in response to a a current instruction of a procedure of said user's program,

protection memory means for storing at least one access control list, each access control list corresponding to an object and comprising at least one access control entry, each access control entry corresponding to a subject having access rights to said corresponding object and containing the access rights of said subject to said corresponding object, and

access rights means responsive to a currently active subject number and to the operation of said processor means for indexing said protection means in response to a current instruction of a procedure of said first user's program when said current instruction requests access to an object and for comparing the access rights of a currently active subject to said object,

ALU means for performing operations directed by said instructions.

first microcode means for storing first selected sequences of microinstructions for controlling operations of said ALU means directed by said instructions, said instructions being S-Language instructions having a uniform, fixed format, said first microcode means responsive to said instructions to provide corresponding first selected sequences of microinstructions to said ALU means, and

second microcode means connected to said bus means for storing second selected sequences of microinstructions for controlling internal operations of said processor means,

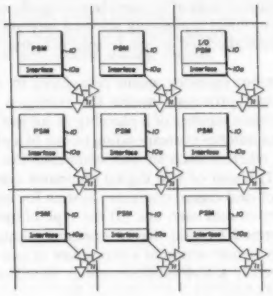
said second microcode means responsive to the operation of said processor means to provide said second selected microinstruction sequences to said ALU means.

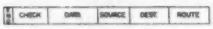
4,498,133

SELECTOR SWITCH FOR A CONCURRENT NETWORK OF PROCESSORS

Brent C. Bolton, Austin; Gary L. Logsdon, Round Rock, both of Tex.; Carl F. Hagenmaier, Jr., Pittstown, N.J., and Jesse R. Wilson, Austin, Tex., assignors to Burroughs Corp., Detroit, Mich.

Filed Dec. 10, 1981, Ser. No. 329,423
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **10 Claims**





1. A selection switch for receiving data signals and a clear signal from one of a plurality of sources in a digital communication network and transmitting those signals to one of two different destinations, said network interconnecting a plurality of stations for transmission and reception of said signals, said switch comprising:

an input port to receive said data signals and said clear signals from said one of a plurality of sources;

a pair of output ports each adapted to receive said data signals and said clear signal from said input port;

selection circuit means to receive said data signals preceded by a routing bit signal specifying which of two outputs ports is to be selected for subsequent transmission and to signal the corresponding one of said output ports; and

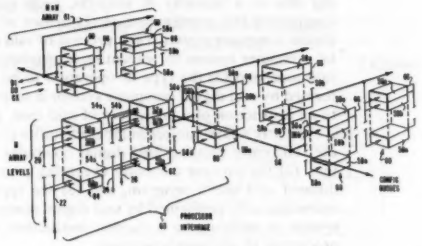
clear circuit means to receive said clear signal from another of said plurality of sources and to reset said output ports and said selection circuit means, whereby a data path established through a network of such switches can be interrupted prior to the completion of transmission of a given message from one station to another station and prior to the receiving station sending an acknowledged end of message signal back to the originating transmitting station.

4,498,134

SEGREGATOR FUNCTIONAL PLANE FOR USE IN A MODULAR ARRAY PROCESSOR

Siegfried Hansen; Jan Grinberg, both of Los Angeles, and Robert D. Etchells, Topanga, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 26, 1982, Ser. No. 342,671
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **9 Claims**



1. In a matrix array processor, a segregratable elemental processor comprising:

(a) a plurality of modules, each including means for performing at least one of a number of generalized logic functions on data;

(b) a data bus operatively associated with each of said modules for the tranfer of data thereinbetween, said data bus including a data bus line, each of said mddules including means for transferring data to and from said data bus line at given points along said data bus line;

(c) a pseudo-module operatively associated with said data bus at a given segregation point along said data bus line, said pseudo-module including means for effectively severing said data bus line at said given segregation point so as to block the transfer of data between any of said modules associated with respective portions of said data bus line on either side of said given segregation point.

4,498,135

MICROCOMPUTER WITH ACCUMULATOR ADDRESSING

Edward R. Caudel, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,957
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **20 Claims**

1. A microcomputer system comprising:

a microcomputer device formed in a single integrated circuit and having data input/output terminals and address output terminals;

memory means external to the microcomputer device having an address input and data output means;

input/output means separate from said microcomputer device and said memory means for transfer of information from the microcomputer device to external equipment; or for transfer of information from external equipment to the microcomputer device; external address bus means coupled to the address output terminals of the microcomputer device and to the address input of the memory means;

external data bus means coupled to the data input/output terminals of the microcomputer device and to the data output means of the memory means;

the microcomputer device comprising:

an arithmetic/logic unit having data input and data output;

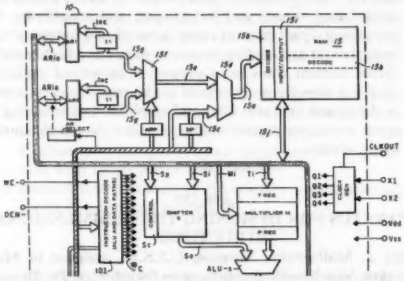
a data memory having an address input and having data input/output means;

internal data bus means coupled to the data input and data output of the arithmetic/logic unit and coupled to the data input/output means of the data memory;

an internal program memory having an address input and having an instruction output, the program memory storing instruction words;

program address means connected to the address input of the program memory means;

control means having input means to receive an instruction word, said control means generating controls at control outputs in response to said instruction word, the controls at said control outputs being coupled to the arithmetic/logic unit and to control elements included in said internal data bus means for defining operation of the arithmetic/logic unit and transfer of data to said internal data bus means and from the internal data bus means;



internal program bus means coupled to said instruction output, to said input means of said control means, and to said program address means, the internal program bus means also including control elements receiving controls from said control outputs of the control means;

bus interchange means for transferring data from the internal data bus means to the internal program bus means, and for transferring data from the internal program bus means to the internal data bus means, the bus interchange means functioning to transfer data from the output of the arithmetic/logic unit via the internal data bus means and the internal program bus means to the program address means to thereby address the internal program memory in response to one said instruction word applied to said input means of said control means and in response to the same said instruction word functioning to transfer data from the instruction output of the program memory via the internal program bus means to the internal data bus means.

4,498,136

INTERRUPT PROCESSOR

William W. Sproul, III, Reston, Va., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,923

Int. Cl.³ G06F *9/30, 9/38, 9/32*

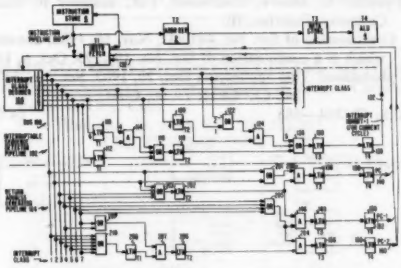
U.S. Cl. 364—200 **2 Claims**

1. In a data processor, an interrupt processor instruction pipeline having a sequence of instruction stages which sequentially process a machine instruction in respective sequential machine cycles, output from an instruction store, comprising:

an interrupt class decoder having an input connected to the output of said instruction store, for decoding each said machine instruction into an interrupt class and outputting a signal on a corresponding one of a plurality of interrupt class output lines;

an interrupt sequence detector pipeline having a sequence of staging registers which are connected to said interrupt class output lines and which are sequentially gated in synchronism with said instruction stages of said instruction pipeline, for sequentially propagating a non-interruptible sequence indicator bit to an output line;

a register having a data input connected to an interrupt signal line, a control input connected to said output of said interruptible sequence detector pipeline and an output



connected to said instruction pipeline, for storing an interrupt signal when said noninterruptible sequence detector bit is input to said control input thereof, said interrupt signal being passed to said instruction pipeline when said detector bit is absent from said control input;

whereby interruptions of said instruction pipeline can be selectively inhibited in response to said interrupt classes of said machine instructions in said instruction pipeline.

4,498,137

PROGRAMMABLE REFINER CONTROLLER WITH HORSEPOWER-DAYS PER TON SCALING

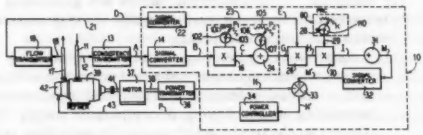
Gary R. Flohr, Lenox, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 21, 1982, Ser. No. 370,577

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.³ G06F *15/46;* B02C *7/14;* D21F *1/04*

U.S. Cl. 364—471 **5 Claims**



1. An apparatus for controlling a paper refiner with a load control for processing paper stock including a motor driving said refiner, comprising a consistency transmitter having a predetermined output signal range for measuring the consistency of the paper stock at the refiner and producing an analog signal, a flow transmitter for measuring flow of paper stock through said refiner, a first signal converter receiving the output of said consistency transmitter and converting it into a signal indicative of the percentage of full scale of said consistency transmitter, a first multiplier receiving the output of said first signal converter and multiplying it by a first constant P1 that is determined by the signal range for the particular consistency transmitter, means for setting said constant P1 to a scaled value, an adder receiving the output of said first multiplier and adding to it a signal proportional to a second constant P2 determined by the signal range for the particular consistency transmitter, means for setting said constant P2 to a scaled value, a second signal converter connected to said flow trans-

mitter and converting the flow transmitter signal into a signal indicative of percentage of full range of said flow transmitter, and a second multiplier receiving the outputs of said second converter and said adder and multiplying them together to obtain a signal indicative of tons of material per day flowing through said refiner.

4,498,138

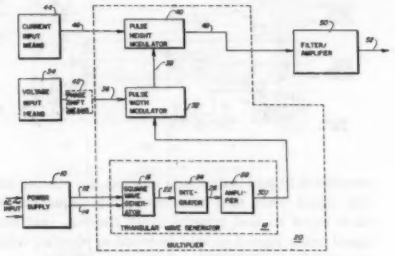
ELECTRONIC WATT/VAR TRANSDUCER

Prentice G. Moore, Clearwater, Fla., assignor to Square D Company, Palatine, Ill.

Continuation of Ser. No. 441,832, Nov. 15, 1982, abandoned, which is a continuation of Ser. No. 194,195, Oct. 6, 1980, abandoned. This application Oct. 20, 1983, Ser. No. 543,742

Int. Cl.³ G01R *19/00*; G06G *7/16*

U.S. Cl. 364—483 **14 Claims**



1. A transducer for monitoring power in a power line and having a power supply means, said transducer comprising:

a. current input means for producing an output current representative signal proportional to the instantaneous current in the power line;

b. voltage input means for producing an output voltage representative signal proportional to the instantaneous voltage in the power line;

c. multiplier means for multiplying said voltage representative signal by said current representative signal to calculate the power in the power line, said mulitiplier means being connected to said output of said current input means and said output of said voltage input means, said multiplier means further comprising:

(1) triangular wave generating means for generating a triangular wave output, said triangular wave generating means still further comprising:

(a) squarewave generating means for producing a square waveform output and a first reference voltage and a second reference voltage, said squarewave generating means having a comparator means for driving an electronic switch means for switching said square waveform output of said squarewave generating means from the voltage level of one of said reference voltages to the voltage level of the other of said reference voltages, and having a resistive feedback means connecting said square waveform output of said squarewave generating means to an input of said comparator means;

(b) integrator means for integrating said output of said squarewave generating means with respect to time to produce a triangular wave output, said integrator means having an input connected to said square waveform output of said squarewave generating means; and

(c) amplifier means for amplifying said triangular wave output, said amplifier means having an input and a feedback means and producing said triangular waveform output, said input being connected to said triangular wave output of said integrator means, wherein the gain of said amplifier means is adjusted by connecting said triangular waveform output of said amplifier means to various points in a resistive means contained in said feedback means from said triangular waveform output to said input of said amplifier means;

(2) pulse width modulating means for modulating said triangular waveform output of said amplifier means of said triangular wave generating means by said voltage representative signal, said pulse width modulating means having two inputs and an output, said inputs being connected to said triangular waveform output of said amplifier means and to said output of said voltage input means;

(3) pulse height modulating means for modulating said current representative signal by said output of said pulse width modulating means, said pulse height modulating means having two inputs and an output, said inputs being connected to said output of said pulse width modulating means and to said output of said current input means; and,

d. filter and amplifying means for filtering out alternating current components of said output of said pulse height modulating means and integrating and amplifying the remaining direct current component of said output of said pulse height modulating means to produce a highly stable direct current transducer output of improved accuracy which is directly proportional to the instantaneous power in the power line, said filter and amplifier means having an input connected to said output of said pulse height modulating means.

4,498,139

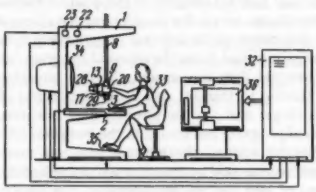
APPARATUS FOR DESIGNING THREE-DIMENSIONAL STRUCTURES

Evgeny J. Malinovsky, Moscow, U.S.S.R., assignor to Moskovskoe Nauchno-Proizvodstvennoe Objedinenie Po Stroitelnomu I Dorozhnomu Mashinostroeniju, Moscow, U.S.S.R.

Filed Oct. 9, 1981, Ser. No. 309,938

Int. Cl.³ G06B *15/46*; G06F *15/56*

U.S. Cl. 364—518 **9 Claims**



1. An apparatus for designing three-dimensional structures, comprising:

a unit for recording linear coordinates;

a movable support of said unit for recording linear coordinates;

a means for causing displacement of said unit for recording linear coordinates along linear coordinates, said means being mechanically coupled to said movable support;

a sensor of displacement along a linear coordinate X which is coupled to said means for causing displacement along linear coordinates;

a sensor of displacement along a linear coordinate Y which is coupled to said means for causing displacement along linear coordinates;

a sensor of displacement along a linear coordinate Z which is coupled to said means for causing displacement along linear coordinates;

an angle joint which is mechanically coupled to one end of said movable part opposite to the means for causing displacement;

an angle arm for causing rotation with respect to X axis in said angle joint, said angle arm being mechanically coupled to said movable support;

an angle arm for causing rotation with respect to Y axis in said angle joint, said angle arm being mechanically coupled to said angle arm for causing rotation with respect to X axis;

an angle arm for causing rotation with respect to Z axis in said angle joint, said angle arm being mechanically coupled to said angle arm for causing rotation with respect to Y axis;

a point of intersection of said X, Y, Z axes of entered coordinates of said movable support coinciding with a point of intersection of said X, Y, Z axes of said angle arm for causing rotation with respect to X axis, said angle arm for causing rotation with respect to Y axis, and said angle arm for causing rotation with respect to Z axis, respectively;

a sensor for recording a change in an angular coordinate ϕ of rotation with respect to X axis which is installed on said movable support and mechanically coupled to said angle arm for causing rotation with respect to X axis;

a sensor for recording a change in an angular coordinate ϕ_1 of rotation with respect to Y axis which is installed on said angle arm for causing rotation with respect to X axis and mechanically coupled to said angle arm for causing rotation with respect to Y axis;

a sensor for recording a change in an angular coordinate ϕ_2 of rotation with respect to Z axis which is installed on said angle arm for causing rotation with respect to Y axis and mechanically coupled to said angle arm for causing rotation with respect to Z axis; and

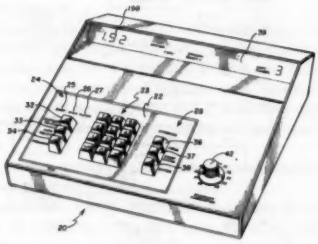
a control board which is electrically coupled to all said sensors and to said angle joint.

4,498,140

AUTOMATED SELF CALIBRATING EXPOSURE COMPUTER

Frank A. Hull, St. Paul, Minn., assignor to Chesley F. Carlson, Minneapolis, Minn.

Filed Jun. 2, 1982, Ser. No. 384,223
Int. Cl.³ G03B 27/72; G01J 1/10
U.S. Cl. 364—571 **38 Claims**



1. An automated self calibrating exposure computer for controlling the energization of lamps used for exposing film during graphic arts processing comprising:

means for sensing light from the lamps indicating when the lamps are energized;

means connected to the sensing means for producing a serial pulse train which relates in number of pulses to the intensity of illumination of the lamps and the time duration of the illumination for purposes of calibration and control;

processing and control means connected to the pulse producing means and the lamps for receiving input data, processing the input data and for supplying control signals to the lamps, said processing and control means comprising:

means for causing the lamps to be energized for a preselected calibration time;

means for counting the number of pulses emitted during the preselected calibration time;

means for storing the pulse count received during the preselected calibration time;

data entry means for entering input data calling for exposure times of the same duration of a longer or shorter duration than the preselected calibration time; and

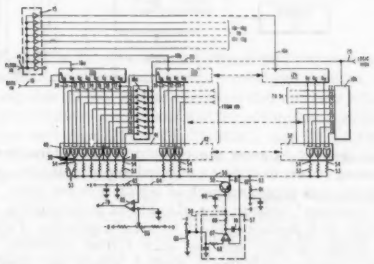
means for causing the lamps to be energized for the periods of time necessary to obtain the required exposure based on the entered data and the initial calibration.

4,498,141

HIGH SPEED CORRELATION CIRCUIT AND METHOD

J. Carl Cooper, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 25, 1982, Ser. No. 342,257
Int. Cl.³ G06F 15/34
U.S. Cl. 364—728 **31 Claims**



18. A high speed correlation circuit for detecting presence of a known digital correlation word in a serial data stream, comprising:

a serial-to-parallel shift register means having an input coupled to receive and store consecutive bits of said serial data stream and to shift said stored bits by one bit position in succession when a new bit is received thereby, said shift register means having a plurality of parallel outputs each containing one bit stored in said shift register means;

a presettable memory means coupled to store respective bits of said known correlation word, said memory means having a plurality of parallel outputs each containing one bit stored in said memory means;

a plurality of logic gates each having a first input coupled to one parallel output of said shift register means and a second input coupled to a corresponding parallel output of said memory means, each logic gate having an output coupled to provide an output signal of a first known logic signal level when matching bits are obtained at its respective inputs and output signal of a second known logic signal level when its input bits do not match, respectively;

a plurality of resistors each having a first terminal coupled to an output of one said logic gate, the other terminals of said resistors being coupled to a common terminal, each said resistor having a value selected to apply an appreciable amount of current to said common terminal when one of said first or said second known logic signal level is provided by said logic gate;

means coupled to maintain said common terminal at a predetermined constant voltage level to obtain a substantially linearly changing current thereon with the number of bit matches obtained by said logic gates;

a current-to-voltage converter means coupled to said common terminal for substantially linearly converting said current changes thereon to corresponding voltage changes; and

means coupled to an output of said current-to-voltage converter means for detecting a known voltage magnitude obtained on said common terminal in response to a prede-

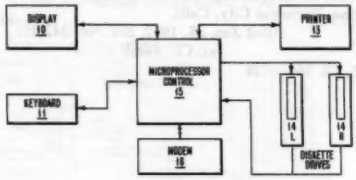
termined number of matching bits obtained by said plurality of logic gates.

4,498,142

METHOD FOR UPDATING A PROGRAM ON A COMBINED PROGRAM DISKETTE IN AN INTERACTIVE TEXT PROCESSING SYSTEM

Hira Advani, and William C. Cason, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1981, Ser. No. 311,113
Int. Cl.³ G06F *7/24*
U.S. Cl. 364—900 **4 Claims**



1. A method to assist the operator of an interactive text processing system to update a selected one of a plurality of text processing task programs each of which is stored on a "combined-program" diskette as a plurality of programming modules, with each module assigned to one of a plurality of sequentially numbered data sets and each further identified by a unique identifier including a portion which can identify a module which is a later revision, from a previous module, said "combined-program" diskette further including control programs to cause said text processing system to transfer program modules on said "combined-program" diskette to a new diskette and to cause said system to interact with said operator in the selection of said one selected text processing task program and the updating of said one selected text processing task programs from a revised program stored on a separate diskette, said system including a keyboard to permit interaction with said system by said operator, a display screen to permit interaction by said system with said operator, a microprocessor having a memory and at least one diskette drive for transferring data between a diskette in said drive and said memory, said method comprising;

(a) inserting said "combined-program" diskette into said diskette drive and transferring one of said control programs into said system in response to operation of said keyboard by said operator,

(b) executing said one control program to cause said system to display a menu to said operator which includes an update option that allows said selected one of said text processing task programs to be updated by replacing one or more of its programming modules with modules having later revisions stored on said separate diskette,

(c) operating said keyboard while said menu is displayed to select said update option to cause an update control program to be transferred to said system from said "combined-program" diskette,

(d) executing said update control program to cause said system to display another menu to said operator which includes a plurality of options to permit said operator to identify to said system said selected one text processing task program to be updated,

(e) operating said keyboard while said another menu is displayed to identify to said system said selected one text processing task program to be updated,

(f) further executing said update program to transfer:

(1) each said module from said "combined-program" diskette to said memory,

(2) and each module transferred in step (1) to said new diskette so that said transferred modules are stored sequentially on said new diskette in data set sequence and sequentially within each said data set by said unique identifiers,

(g) displaying to said operator at the end of the preceding step an instruction to insert said separate program diskette into said drive,

(h) inserting said separate program diskette into said drive and while said instruction is still being displayed operating said keyboard to advise said system said separate diskette has been inserted,

(i) transferring to memory from said separate program diskette each of the programming modules which collectively represent the revised version of the text processing task program being updated,

(j) comparing with said microprocessor said unique identifiers of the modules transferred from said separate program diskette to the unique identifiers of the corresponding modules transferred from said "combined-program" diskette and identifying those modules that have been revised, and

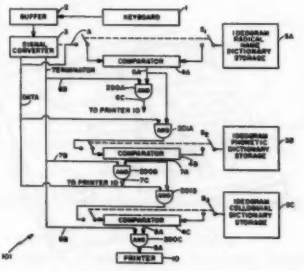
(k) recording said revised modules on said new diskette in place of said corresponding modules and at corresponding locations on said new diskette.

4,498,143

METHOD OF AND APPARATUS FOR FORMING IDEOGRAMS

Stanislaus Strzelecki, 15 Hunts La., Brooklyn, N.Y. 11201

Filed Nov. 12, 1981, Ser. No. 320,540
Int. Cl.³ B41J *1/52*
U.S. Cl. 364—900 **7 Claims**



1. A system for forming ideograms, such system comprising:

a keyboard having a plurality of keys for entering characteristic radical information, phonetic information, and colloquial information pertaining to an ideogram;

storage means, for storing information for each ideogram including (1)(a) radical information, and, at least to the extent necessary for unambiguous identification of the ideogram when the radical information is known, (b) phonetic information and, at least to the extent necessary for unambiguous identification of the ideogram when the radical and phonetic information is known, (c) colloquial information, and (2) a graphic record identifier; and

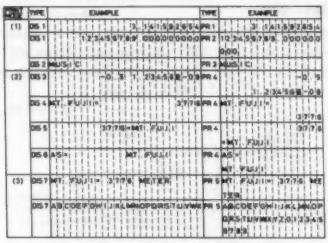
control means for obtaining from the storage means the graphic record identifier for a given ideogram in response to information entered on the keyboard.

4,498,144

ELECTRONIC APPARATUS WITH A DISPLAY AND PRINTER

Isamu Haneda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1981, Ser. No. 323,049
Claims priority, application Japan, Nov. 19, 1980, 55-163759
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—900 **4 Claims**



1. An improved electronic apparatus of the type having a visual display and a printer as output devices, the printer having a smaller capacity of characters per line than does the visual display, wherein the improvement comprises:

means for reviewing a group of characters presented for visual display and assigning the group of characters to an appropriate one of three modes, characters within the group of characters being of two types, numeric and all others, the three modes being defined as:

(1) all characters in the group of characters being of the same type;

(2) characters in the group of characters being of at least one of the two types, of a total number equal to or less than the capacity of the visual display, and being divisible into two successive portions each containing only characters of a single type and of a number equal to or less than one-half of the capacity of the visual display; and

(3) any other group of characters wherein the characters are of the two types;

means responsive to the means for reviewing for causing a group of characters assigned to mode (1) to be printed with the numeric characters abutting against a first margin of the printer and with the other characters abutting against a second, opposing margin of the printer;

means responsive to the means for reviewing for causing a group of characters assigned to mode (2) to be separated into these two portions with each of the two portions being printed on separate lines and with each portion that consists of numeric characters being printed abutting against the first margin of the printer and each portion containing other characters being printed abutted against the second margin of the printer; and

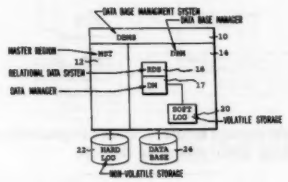
means responsive to the means for reviewing for causing a group of characters assigned to mode (3) to be printed continuously from the left margin of the printer for as many sequential lines as are necessary to complete printing of the group of characters.

4,498,145

METHOD FOR ASSURING ATOMICITY OF MULTI-ROW UPDATE OPERATIONS IN A DATABASE SYSTEM

Jerry W. Baker, Morgan Hill; Richard A. Crus, San Jose, and Donald J. Haderle, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,967
Int. Cl.³ G06F *7/00, 11/00*
U.S. Cl. 364—900 **6 Claims**



1. A method for assuring atomicity of user requested multi-row update operations to tables in a relational database, guaranteeing that for any update operation that succeeds all stated effects will have occurred and that for any update operation of the type including UPDATE, INSERT, and DELETE that fails, the system state as perceived by the user remains unchanged, comprising the steps of:

in response to an update operation request, establishing an execution module of a program containing sets of machine language code instructions implementing the update operation request with a savepoint request at the beginning of the execution module of the program;

for each set of machine language code instructions in or called by the execution module of the program which modifies the user perceived system state, selectively recording in a soft or hard log information required to reverse the update operation in order that it appears that the operation was never performed;

upon completing the execution module of the program, dropping the savepoint and causing all soft log information recorded since the savepoint to be deleted, and releasing all resources held to guarantee restoration of the user perceived system state at the time of the savepoint request;

upon detecting an error and responsive to the information selectively recorded in the soft or hard log, restoring the user perceived state to that at the time of the savepoint request.

4,498,146

MANAGEMENT OF DEFECTS IN STORAGE MEDIA

Maria N. Martinez, Prestbury, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

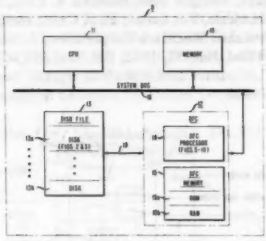
Filed Jul. 30, 1982, Ser. No. 403,776
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 **55 Claims**

1. Method of accessing storage media having addressable locations and having a table of addresses of defective locations associated therewith, comprising the steps of:

obtaining for execution of a job an address for accessing a location in the storage media;

reading contents of the table while executing the job to determine if the access to the media will be impacted by defective locations;

modifying the obtained address while executing the job to compensate for the impact of defective locations; and



accessing the storage media location designated by the modified address while executing the job.

4,498,147

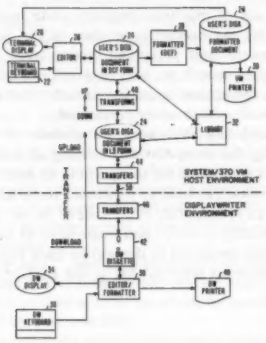
METHODOLOGY FOR TRANSFORMING A FIRST EDITABLE DOCUMENT FORM PREPARED WITH A BATCH TEXT PROCESSING SYSTEM TO A SECOND EDITABLE DOCUMENT FORM USABLE BY AN INTERACTIVE OR BATCH TEXT PROCESSING SYSTEM

Palmer W. Agnew, Owego; Anne S. Kellerman, Endicott, and Grayson W. Randall, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,927

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—900 **7 Claims**



1. A method of transforming a source document, cast in a first editable form which includes a plurality of input items therein, to a target document of a second editable form which includes output items compatible therewith, said method comprising the steps of:

(a) determining a set of key state variables, from amongst all possible key state variables, that reflect and collectively identify information concerning the presence of source document control items that are read in a sequence thereof from said source document;

(b) determining criteria for compatibility of source input items to be read with source controls that have been read in a sequence and reflected in said key state variables;

(c) establishing a fixed order for all possible output items in which any necessary pair of output items in the transformation of a given input sequence will be written in said established order;

(d) defining a set of rules for each possible output item that determine whether each of said possible output items is to be written out to said target document as a function of the status of said state variables; and

(e) reading a sequence of input items from said source document in accordance with said compatibility criteria; and

(f) writing out all eligible output items under said rules as a transform of said sequence in said fixed order of output items.

4,498,148

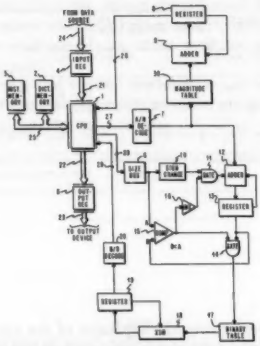
COMPARING INPUT WORDS TO A WORD DICTIONARY FOR CORRECT SPELLING

David Glickman, Frederick, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 160,345, Jun. 17, 1980, abandoned. This application Feb. 23, 1983, Ser. No. 469,051

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—900 **7 Claims**



1. In a text processing system including a mini-processor, a memory for storing instructions for controlling said mini-processor, and a dictionary memory for storing a representation for each word of a dictionary of correctly spelled words, apparatus for checking the spelling of input words by comparison to said dictionary of representations of correctly spelled words comprising:

a source of input words connected to said mini-processor

decode means connected to said mini-processor for converting each character of an input word into an output numerical representation;

a magnitude table storage means addressably connected to said decode means for outputting a magnitude value corresponding to each numerical representation output by said decode means;

a first adder means connected to said magnitude table storage means and said mini-processor for accumulating a magnitude sum of the magnitude values output by said magnitude table storage means and outputting said magnitude sum to said mini-processor for use as an address to access said dictionary memory;

a second adder means connected to said decode means for accumulating partial sums of said numerical representations output by said decode means;

binary table storage means connected to said second adder means for storing a plurality of binary numbers addressable to output one of said binary numbers for each partial sum accumulated by said second adder means;

third adder means connected to said binary table storage means for accumulating a modulo-2 sum of the output of said binary table storage means;

binary-to-decimal decode means connected to said third adder means and said mini-processor for converting the modulo-2 sum output of said third adder means from a binary number to a decimal angle value and outputting the result to said mini-processor;

means for comparing said decimal angle value to the contents of said dictionary memory at the accessed address;

means for indicating said input word is correctly spelled when said compare is equal; and

means for indicating said input word is not correctly spelled when said compare is unequal.

4,498,149

SYMBOL INPUT DEVICE FOR USE IN ELECTRONIC TRANSLATOR

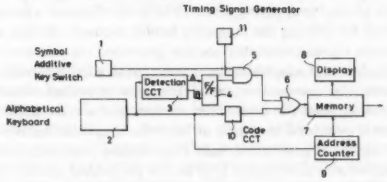
Kunio Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 201,604, Oct. 28, 1980, abandoned. This application Aug. 8, 1983, Ser. No. 521,414

Claims priority, application Japan, Oct. 29, 1979, 54-140196

Int. Cl.[3] G06F 3/02

U.S. Cl. 364—900 **7 Claims**



1. An input circuit for an electronic translator wherein a first input word represented in a first language is entered to obtain a second word represented in a second language equivalent to the first word, said input circuit comprising:

an alphabetical keyboard means comprising a plurality of letter keys, each letter key comprising means for entering key code information representative of a sole letter;

a sole symbol additive key switch for adding any one of a plurality of different specific symbols to at least two of the letters entered by the alphabetical keyboard means, and

changing means responsive to actuation of the alphabetical keyboard means and the symbol additive key switch for changing the key code of any one of the at least two letters entered by the alphabetical keyboard means to a key code representing a letter including one of said specified different symbols and said one letter, wherein said changing means comprises

key strobe signal generator means for providing key strobe signals to the alphabetical keyboard means, said keyboard means acting upon said key strobe signals to provide said key code information;

memory means for storing data corresponding to key code information representing said at least two letters;

first means for determining when key code information input by said alphabetical keyboard means is the same as said data in said memory corresponding to said key code information representing one of said at least two letters;

second means for generating information representative of any one of said plurality of different specific symbols in response to actuation of said sole symbol additive key switch; and

third means responsive to said first and second means for combining said information representative of any one of said plurality of different specific symbols with the key code information representing said one of said at least two letters for forming a new type of code information representative of said one letter including one of said specific symbols.

4,498,150

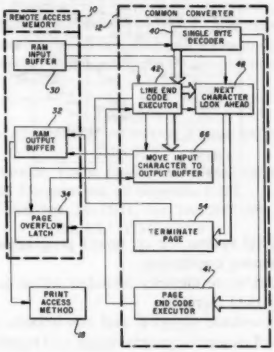
DOCUMENT AUTOMATIC PAGINATION

James L. Gaudet, and Rudolph E. Chukran, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 274,364, Jun. 16, 1981, abandoned. This application Nov. 23, 1983, Ser. No. 554,611

Int. Cl.[3] G06F 3/12

U.S. Cl. 364—900 **10 Claims**



1. A method for automatically paginating a data stream of text in a word processing system having a printer for creating a hard copy printout, comprising the steps of:

formatting said data stream into logical pages in a memory, each logical page defined by a first and last typing line and having a plurality of line end codes;

initializing a vertical tracking register for a first typing line of a logical page to be printed by said printer on a hard copy page;

incrementing the vertical tracking register by a value representing a vertical displacement of a vertical print position of the printer when a line end code is encountered in the data stream;

when said line end code is encountered in the data stream, interrogating a page overflow latch to determine whether a page overflow condition is pending, the pending page overflow condition indicating that the vertical tracking register has reached a predetermined value corresponding to a last typing line of a logical page;

when a page overflow condition is pending, interrogating the next character in the data stream following the line end code to determine whether said next character is a graphic character;

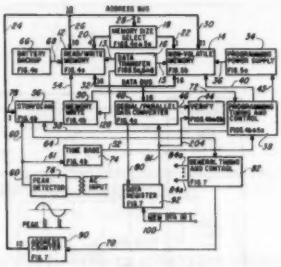
when the next character is a graphic character, copying a page end code into an output buffer ahead of said graphic character to indicate a page overflow condition, the completion of a hard copy page, and that printing of the data stream should continue on a next hard copy page; and

when said next character is a nongraphic character, indicating in the output buffer that the page overflow condition remains pending until the next graphic character is reached.

4,498,151
ON BOARD NON-VOLATILE MEMORY PROGRAMMING

Raymond W. Henry, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 141,090, Apr. 17, 1980,. This application Jan. 17, 1984, Ser. No. 556,472
Int. Cl.³ G06F 7/00
U.S. Cl. 364—900 8 Claims



1. A digital system for on board programming of a non-volatile memory comprising:

(a) A read/write memory included within said system for storing data therein,

(b) a non-volatile memory, said non-volatile memory comprised of means for programming said memory and means for writing data therein,

(c) circuit means for transferring data into and out of each of said memories, said circuit means including means for generating enabling/disabling signals to said non-volatile memory and to said read/write memory during programming of said non-volatile memory,

(d) timing means coupled to said non-volatile memory for generating a program pulse of predetermined duration to said non-volatile memory,

(e) means for generating a program voltage signal of predetermined magnitude and applying said voltage signal to said non-volatile memory, said enabling/disabling signals, program pulse and program voltage signals being generated within said system and effecting transfer of data from said read/write memory to said non-volatile memory without removing said non-volatile memory from said system,

(f) means for verifying proper programming of said non-volatile memory by the read/write memory comprising:

data circuit means coupled to said memories for transmitting the data outputs from each of said memories,

electrically energizable visual means coupled to said data circuit means,

comparator means coupled to said data circuit means for comparing the outputs for differences between the data in the non-volatile memory and the read/write memory and energizing said visual means upon detecting any of said differences, and

latching means coupled to said visual means and adapted to latch the visual means in the energized state when energized as a result of detecting any of said differences,

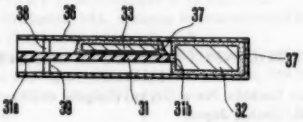
and means to vary when said program pulse signal starts within a scan of memory whereby different portions of the memory contents can be scanned to determine the exact location of any error,

and means for changing the read/write memory storage input to said comparator to a constant voltage level and comparing said non-volatile memory output to said constant voltage level to determine whether said non-volatile memory has been completely erased.

4,498,152
CASSETTE TYPE MAGNETIC BUBBLE MEMORY DEVICE

Toshio Futami; Shoji Yoshimoto, and Ryuji Yano, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,154
Claims priority, application Japan, Apr. 9, 1982, 57-58135
Int. Cl.³ G11C 19/08
U.S. Cl. 365—1 7 Claims

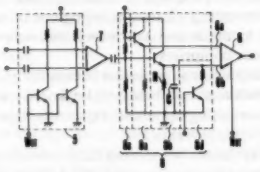


1. A cassette type magnetic bubble memory comprising: a magnetic bubble memory device mounted to extend above and below a base plate and having a magnetic bubble memory element, a pair of coils for generation of a rotating field for driving the element, and a pair of permanent magnet plates and yoke plates for applying a bias field to the element; a peripheral circuit for driving the magnetic bubble memory device; and an electric signal connector section provided on one end of the base plate and adapted to be connected to a loader, wherein an electrically conductive metal frame is provided which surrounds at least the connector section, and a resin sealing medium is provided in which at least the magnetic bubble memory device is embedded, said resin sealing medium extending continuously to transmit heat to the peripheral surface of said cassette.

4,498,153
OUTPUT SIGNAL DETECTORS OF MAGNETIC BUBBLE MEMORY DEVICES

Ryuji Yano; Shinsaku Chiba; Kazutoshi Yoshida; Kazuhiro Ishida, and Shoji Yoshimoto, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,641
Claims priority, application Japan, Mar. 13, 1981, 56-35330
Int. Cl.³ G11C 19/08
U.S. Cl. 365—10 2 Claims



1. In a detector of a magnetic bubble memory device of the type comprising a magnetic bubble memory element having a detector, means for passing constant current through said detector so as to produce a bubble output signal according to the magnetoresistive effect of said detector, a preamplifier for amplifying said output signal, circuit means for DC regenerating and output signal of said preamplifier, and a discriminator for converting said DC regenerated signal into a logical signal, the improvement which comprises a holding circuit connected between said preamplifier and said discriminator for holding a peak value of the DC regenerated signal for a predetermined time wherein the output signal from said DC regeneration is transmitted to said holding circuit to produce a first output therefrom to be made a first input to said discriminator and the other input to said discriminator is the peak value of said output signal, said discriminator providing a threshold level set at

a predetermined voltage with respect to said first input for a comparison with said second input to generate a logical signal.

4,498,154

MONOLITHICALLY INTEGRATED SEMICONDUCTOR MEMORY

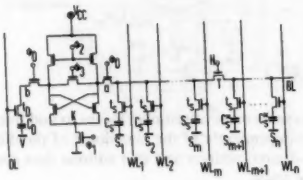
Kurt Hoffmann, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,781

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101802

Int. Cl.³ G11C *11/24*

U.S. Cl. 365—149 **16 Claims**



1. Monolithically integrated semiconductor memory with a matrix of identical storage cells arranged in rows and columns, each storage cell including an MOS field-effect transistor and a storage capacity in the form of an MOS capacitor and wherein also a comparator and a comparison cell identical to one of the storage cells and operatively associated with each matrix row the improvement which comprises means for bridging at least one point of interruption in the path of a bit line extending from one another of at least one adjacent storage cells in each row, said bridging means being an MOS field-effect transistor having a drain and a source and a current-carrying path bridging said at least one point of interruption.

4,498,155

SEMICONDUCTOR INTEGRATED CIRCUIT MEMORY DEVICE WITH BOTH SERIAL AND RANDOM ACCESS ARRAYS

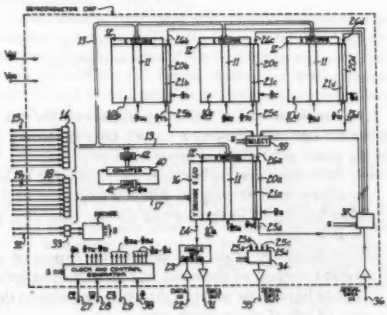
G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 97,104, Nov. 23, 1979, Pat. No. 4,347,587. This application May 24, 1982, Ser. No. 381,096

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—189 **13 Claims**



1. A memory device providing both plural-bit serial and single-bit random access, comprising a body of single crystal semiconductor material, a random-access read/write array formed in one face of said body, address terminals on said face, control terminals on said face, a serial-access data output terminal and random-access input/output terminals on said face coupled to said read/write array, first addressing means for receiving and decoding a row address from said address terminals for selecting a row in said array, second addressing means for receiving and decoding a column address from said address terminals for selecting a column or columns in said random access array, and control means for receiving input commands from said control terminals selecting between random-access or serial-access of said array, said array having serial-access register means selectively coupled to columns of said array, means to selectively clock the serial-access register means of said array, means for connecting a data output from the serial-access register means of the array to said data output terminal for serial-access of the memory device, and random-access input/output access means coupling said array to said random-access input/output terminals for said memory device.

4,498,156

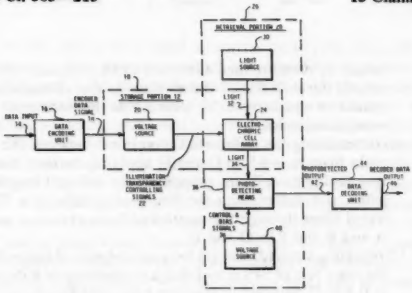
ELECTROCHROMIC NONVOLATILE MEMORY DEVICE

Frank A. Pizzarello, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1981, Ser. No. 305,248

Int. Cl.³ G11C *13/04*

U.S. Cl. 365—215 **13 Claims**



1. Apparatus for storing and retrieving data, comprising:

a plurality of electrochromic cells having electrically controllable illumination transparency;

means electrically controlling the illumination transparency of selected ones of said cells in accordance with data to be stored;

a light source which projects a flood illumination upon said plurality of electrochromic cells during data retrieval; and

a charge transfer device comprising a plurality of charge transfer device cells for photodetecting illumination from said light source and passed by said selected electrochromic cells onto said charge transfer device to effect retrieval of data stored in the illumination transparency of said plurality of electrochromic cells.

4,498,157

METHOD OF DETERMINING WEATHERING CORRECTIONS IN SEISMIC OPERATIONS

Lincoln A. Martin, Altadena, and William F. Fenley, Jr., Pasadena, both of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Filed Apr. 20, 1981, Ser. No. 255,379

Int. Cl.³ G01V *1/36*

U.S. Cl. 367—50 **22 Claims**

1. In a seismic system having at least one line of spacial source points (SPs) A,B,C, the position of each SP known; and

having at least one different line of spaced receiver points (RPs), D,E,F,G, the positions of each RP known; to the lines not colinear.

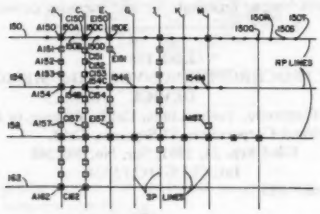
the method of determining the differential static time correction by transmission through the weathered layer, from the records from adjacent closely spaced SPs A and B, comprising the steps of;

(a) recording a first record from a first SP, A to a plurality of closely spaced RPs D,E,F,G;

(b) recording a second record from a second SP, B to a plurality of closely spaced RPs D,E,F,G;

(c) determining the horizontal distances from SP A to each of the RPs D,E,F,G,; and from SP B to each of the RPs D,E,F,G,;

(d) selecting a first pair of traces from said first and second records, in which the path lengths from adjacent SPs such as A,B, to a selected pair of RPs such as D,E, differ in



length by no more than a selected small dimension dE, for which the differential travel time in the subsurface dt, would be equal to dE/V, where V is the horizontal subweathering velocity;

(e) determining the differential travel time between the two paths from A and B to D and E, applying the time correction dt algebraically to compensate for different lengths of paths, and determining the first timing difference T1 in travel times through the weathered layer at source points A and B and RPs D and E;

(f) repeating steps (d) and (e) for a second pair of traces from the same pair of SPs A and B to a second pair of RPs, such as E and F, adjacent to said first pair; applying the proper time correction dt and determining the second time difference T2 in travel times through the weathered layer; and

(g) determining the average value TA of the time differences T1 and T2 of said plurality of pairs of paths.

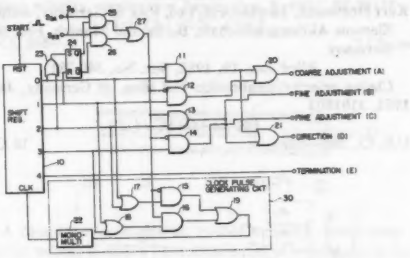
4,498,158

ADDRESS DATA SEARCHING METHOD FOR DATA RECORDING MEDIUM REPRODUCING DEVICE

Tetsuo Akiyama, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,441
Claims priority, application Japan, Jul. 3, 1979, 54-84704
Int. Cl.³ G11B 7/00, 17/00
U.S. Cl. 369—32 **9 Claims**

1. A method for operating a recording medium reproducing device comprising the steps of: reading address data from a data track of a recording medium; comparing said address data read from said recording track of said recording medium with supplied address data representing a desired address upon said recording medium in a comparison means to produce an output signal representing whether said read address data is larger than, coincident with, or is smaller than said supplied address data; operating fine and coarse adjustment means to adjust the position of pick-up means relative to said data track in accordance with said output signals from said comparison means such that the direction of position adjustment of said pick-up means is reversed upon the variation of said output signals of said comparison means, said adjustment operation being switched from said coarse adjustment means to said fine adjustment means as a function of an output signal of said comparison means provided at the start of said adjustment operation and in accordance with the number of transitions in said comparison means output signal which have occurred since said start of said adjustment operation, said adjustment operation being



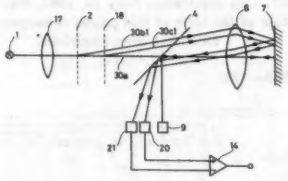
switched from said coarse adjustment means to said fine adjustment means independently of the magnitude of the difference between said desired address and said address data read from said recording track.

4,498,159

TRACK DEVIATION DETECTING APPARATUS

Masahiro Daimon, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,579
Claims priority, application Japan, Feb. 25, 1982, 57-30796
Int. Cl.³ G11B 7/00, 21/00
U.S. Cl. 369—44 **11 Claims**



1. A track deviation detecting apparatus for use with a means for optically making a record on a recording medium having guide grooves, said apparatus comprising

two diffraction grating surfaces for producing at least two auxiliary spots serving to detect a deviation of a spot of light having its image formed on the recording medium from a track,

optical means for projecting said auxiliary spots on an unrecorded portion of the track at a position just before said spot of light as viewed in a direction opposite to the direction of travel of the track, and

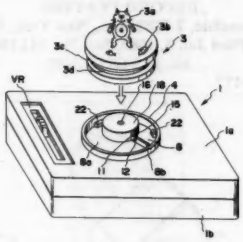
optical detectors installed correspondingly to the respective auxiliary spots and adapted to detect the reflected light rays from said at least two auxiliary spots on the recording medium.

4,498,160

SIMPLIFIED RECORD PLAYER CAPABLE OF AUTOMATICALLY HOUSING REPRODUCING STYLUS UPON REMOVAL OF RECORD DISC FROM THE RECORD PLAYER

Eishi Koiki, Sagamihara, Japan, assignor to Ozen Corporation, Japan

Filed Sep. 24, 1982, Ser. No. 422,687
Claims priority, application Japan, Jun. 14, 1982, 57-101787
Int. Cl.[3] G11B *3/28, 3/40*
U.S. Cl. 369—63 4 Claims



1. In a simplified record player comprising a record holding portion for holding a record member without permitting its rotation, a turn table attached with an integrally formed speaker in coaxial and back-to-back relation thereto is received by a center pin disposed upright on the casing at an integrally formed sleeve capable of being axially moved along said center pin, a vibrating blade attached to said speaker in a manner surrounding but without contacting said sleeve of said turn table for receiving the center pin, a sound transmitting bar extending above and along said turn table substantially connected to said speaker by being attached at its middle part to said vibrating blade, a tone arm swingably disposed on said turn table and being slidably supported by said sound transmitting bar capable of begin swung while sliding on said sound transmitting bar capable of being swung while sliding on said sound transmitting bar and with its sound reproducing stylus directed to said record member, said turn table being connected to a drive means and normally urged by spring means toward the recorded face of said record member, the improvement comprising:

a. said turn table including on its central portion a boss having a height higher than the tip end of said reproduction stylus, a guide hole on the upper central portion and a recessed portion formed in the side wall of said boss;

b. means for biasing said tone arm toward said boss such that said sound reproduction stylus can be received in said recessed portion of said boss;

c. said record member including at its central bottom portion an annular concave portion adapted to receive at least the upper portion of said boss of the turn table, and a projecting rod formed on the center portion of said concave portion of said record member and adapted to be inserted into said guide hole of said boss;

d. said record holding portion comprises means for locking said record member in an axial direction;

e. a pusher slidably attached around said center pin which is advanced by being pushed by said projecting rod;

f. a head disposed at the lower end of said pusher for urging said tone arm outward from said recessed portion of said boss by a wedge action given by an inclined surface against said biasing means after said record member has been placed on said record holding portion but immediately before said record member is fixed by said locking means; and whereby

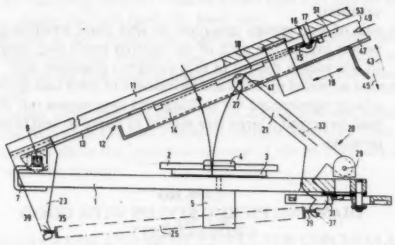
a necessary stylus force to be imparted to said sound reproducing stylus being engaged with the recorded groove of said record member after having been pushed out from said recessed portion of said boss is assured by a cooperative action of said biasing means urging said turn table toward said recorded face and said member having been fixed to said record holding portion.

4,498,161

DISC PLAYER

Kurt Eisemann, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,304
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211358; Mar. 27, 1982, 3211359
Int. Cl.[3] G11B *1/00, 25/04*
U.S. Cl. 369—75.2 8 Claims



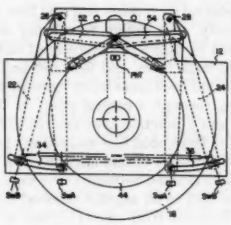
1. A disc player for a rigid information-carrying disc, said player comprising a turntable which is mounted for rotation on a chassis and a lid for closing said player, said player also including resilient means coupled to said lid, stop means, a latch, and a latching plate; said lid being pivotally connected to said chassis, said player including a disc loader carried by said lid, said loader when said lid is pivoted toward said turntable, acts resiliently on said turntable, said lid when closing performs a pivotal movement in respective loading and lifting stages, said lid including at least one stop element, said lid in said loading stage being pivoted towards said turntable, during which said disc loader urges the disc against said turntable, in said lifting stage consecutive to said loading stage said lid being pivoted away from said turntable by said resilient means into a final position in which said lid is positioned by said stop means, in said final position of said lid said disc loader being clear of the disc, and in which said latch which is movable relative to said chassis, moves to a position in the pivotal path of said stop element, and inhibits a return to said loading stage.

4,498,162

AUTOMATIC DISC LOADING APPARATUS

Etienne A. Schatteman, Wemmel, Belgium, assignor to Staar S. A., Belgium

Filed Apr. 11, 1983, Ser. No. 483,698
Claims priority, application Belgium, Apr. 23, 1982, 892,952
Int. Cl.[3] G11B *25/04*
U.S. Cl. 369—77.1 17 Claims



1. In a disc record player apparatus,

mechanism for guiding and centering disc records on a disc record drive having a vertical spindle comprising, in combination:

a horizontal plate for receiving a disc record inserted and movable along a horizontal path to a position centered on said spindle;

means on said plate for guiding inserted disc records of different size to said centered position, including:

spaced levers pivotally movable laterally outwardly from a first position straddling the center line of said path;

means resiliently urging said levers toward each other;

said levers at said first position being spaced sufficiently to engage an inserted disc record of either a small size or a large size and be moved outwardly thereby against said resilient means to guide a record of either size to centered position;

a pair of stop means mounted on said plate straddling said center line in the path of an inserted small size record to locate such a record in said centered position; and

means actuated by outward movement of both said levers by a large size record for shifting said stop means out of said path to permit a large size record to move to said centered position.

4,498,163

DIAMOND PICKUP STYLUS WITH GOOD GRINDABILITY

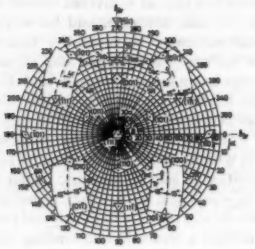
Keiji Segawa, Sagamihara; Mikio Naoi, Tokyo, and Masaki Murakami, Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Jul. 30, 1982, Ser. No. 403,346

Claims priority, application Japan, Jul. 30, 1981, 56-119550

Int. Cl.³ G11B *9/00, 3/00*

U.S. Cl. 369—126 **1 Claim**



1. An electrostatic capacitance type pickup stylus for use on an information storage disc, comprising a crystal of diamond including á sliding face for slidable contact with the information storage disc, an electrode face supporting thereon a conductive electrode layer for detecting signals on the information storage disc as changes in electrostatic capacitance, a pair of first and second angularly spaced back faces adjoining said electrode face, and a pair of first and second angularly spaced guide faces adjoining each other and said first and second back faces, respectively, said sliding face being in the form of a pentagon defined by ridges respectively of said electrode face, first and second back faces, and first and second guide faces, said first and second back faces being symmetrical with respect to a line passing through a central point on the ridge of said electrode face and a junction between the ridges of said first and second guide faces, said first and second guide faces being symmetrical with respect to said line, said first back face being disposed in an area defined between $(\bar{1}11)$ and $(\bar{1}01)$ faces of the diamond crystal and in an angular interval of about ±15 degrees across a direction from said $(\bar{1}11)$ face to said $(\bar{1}01)$ face, said second back face being disposed in an area defined between $(1\bar{1}1)$ and $(0\bar{1}1)$ faces of the diamond crystal and in an angular interval of about ±15 degrees across a direction from said $(1\bar{1}1)$ face to said $(0\bar{1}1)$ face, said first guide face being disposed in an area defined between $(01\bar{1})$ and (010) faces of the diamond crystal and in an angular interval of about ±15 degrees across a direction from said $(01\bar{1})$ face to said (010) face, and said second guide face being disposed in an area defined between $(10\bar{1})$ and (100) faces of the diamond crystal and in an angular interval of about ±15 degrees across a direction from said $(10\bar{1})$ face to said (100) face.

4,498,164

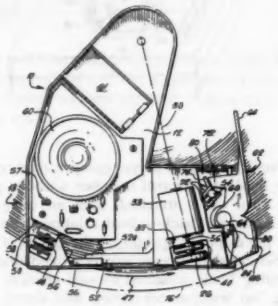
RECORD PLAYERS

Steven A. Lebensfeld, 2 Fifth Ave., New York, N.Y. 10011

Filed Jul. 8, 1983, Ser. No. 512,196

Int. Cl.³ G11B *3/40*

U.S. Cl. 369—177 **7 Claims**



1. A record player arranged to be placed on top of a stationary record to sweep around the record about a pivot point at the center of the record and to reproduce sound from the sound groove in the record, comprising:

a support base;

a downwardly projecting pin arranged to engage in and locate with the center of a sound record;

pivot means between said base and said pin; a pair of spaced wheels rotatably carried by the base, said wheels having axes about which said wheels are rotatable, said axes being aligned radially relative said pin, and said wheels engaging the upper surface of said record near its outer periphery to support said base above said record;

an electric drive motor for driving one of said wheels at a substantially constant speed whereby said base sweeps around the record about the pivot pin at a preset rate of rotation;

a playing arm pivotally carried by said base and having an outer trailing end;

a pickup head and needle at said outer trailing end for engaging in the sound reproduction groove of the record as said base sweeps around said record;

lifting means positioned beneath said arm for engaging and raising it so that said head and needle are above the level of said base when said device is not operating;

a control lever pivoted to said base and movable between an operating position and a non-operating position;

switch means controlled by said lever for controlling energisation of said motor when said lever is in said operating position; battery means carried by said base for powering said motor through said switch means;

a first projection formed on said lever and arranged to engage said lift-up means when said lever is in its non-operating position to raise said head clear of a record; and

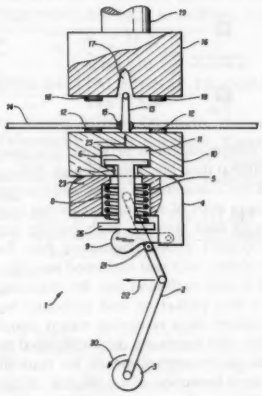
a sound reproduction means including a loudspeaker for providing a sound output from the signal provided by said pickup head.

4,498,165

APPARATUS FOR THE CENTERED MOUNTING AND UNMOUNTING ON A DEVICE SPINDLE

Richard A. Wilkinson, Jr., Boulder, Colo., assignor to Storage Technology Partners II, Louisville, Colo.

Filed Oct. 3, 1983, Ser. No. 538,403
Int. Cl.³ G11B *17/00, 17/04*
U.S. Cl. 369—270 **2 Claims**



1. An apparatus for the rotational centered mounting of a disk having a center hole, said apparatus comprised of:

a disk elevating means for raising and lowering a disk hub and a support base toward and away from a spindle, said elevating means having reciprocating movement;

a spin motor;

a spindle, rotatably attached to the spin motor, said spindle having a tapered hole at the center of rotation of a mating surface of the spindle, and a ring magnet concentrically disposed on the mating surface of the spindle;

a disk support hub, said hub slidably resting upon a support base, said hub having,

a steel ring concentrically disposed on a mating surface of the hub, said hub having a tapered centering stem for the centered mounting of the disk thereon, said stem being located in the center of the mating surface of the hub, and said hub having an interior opening in a bottom surface thereof, the interior opening having a lip for rotatably retaining an upper flange of a clamping member;

a disk support base, said base being attached to the elevating means and having a center passage for reciprocative movement of the clamping member, said passage having an upper neck for retention of a spring;

said clamping member having an upper and a lower flange, the lower portion of the clamping member being disposed in the center passage of the base, such that said lower flange can thereby cooperate with the upper neck of the base to retain the spring in the base passage, and the upper portion of the flange being disposed in the hub interior opening, such that said upper flange can thereby cooperate with the lip on the hub to selectively clamp the hub to the base when the elevator means is in an unactivated position, but which releases the hub from the base when the elevating means is activated moving the clamping member to a raised position;

a spring, said spring providing a force for clamping the hub to the base, said spring being disposed around the clamping member in the passage on the base between the upper neck on the base and the lower flange on the clamping member;

a cam for reciprocatively actuating the clamping member, said cam being rotatably attached to the base and in contact with the bottom of the clamping member; and

means for activating the cam in coordination with the disk elevating means;

whereby when the elevating means is unactivated and in a lowered position, the spring forces the clamping member downward, causing the upper flange of the clamping member to cooperate with the lip of the hub to clamp the hub to the base; and

whereby when the elevating means is activated to the move upward, the hub is raised by the elevating means and the centering stem engages the tapered hole in the spindle, causing the hub to move laterally relative to the spindle, thereby centering the hub and the disk with respect to the spindle; and

whereby as the base is raised, the cam is activated, raising the clamping member relative to the base and hub so as to unclamp the hub from the base; and

whereby at the uppermost position of the elevating means movement, the magnet ring on the spindle and the steel ring on the hub magnetically clamp the disk to the spindle; and

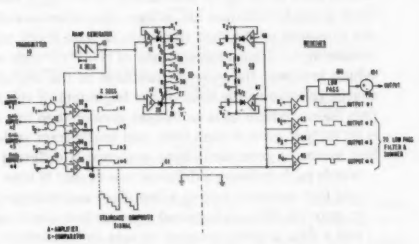
whereby when the elevating means is then lowered slightly, the hub with the disk clamped thereto separates from the base to allow the centered rotation of the hub and the disk with the spindle.

4,498,166

MULTIPLEXER AND DEMULTIPLEXER CIRCUITS FOR ANALOG SIGNALS

Anthony Esposito, 159 Connetquot Rd., Oakdale, N.Y. 11769

Filed Nov. 12, 1982, Ser. No. 440,866
Int. Cl.³ H04J *7/00*
U.S. Cl. 370—9 **16 Claims**



1. A system for multiplexing a plurality of input signals to form a composite signal for transmission over a common transmission channel and for deriving replicas of said input signals at a receiver site from said composite transmitted signal, comprising

means for generating a reference signal,

detecting means responsive to the amplitude of said reference signal for generating a series of proportional reference levels each separate one indicative of and associated with a separate, one of said plurality of input signals,

a plurality of comparison means each associated with one input signal and each responsive to one separate proportional reference level to provide at an output a separate information signal indicative of the value of said input signal according to the level of said associated proportional reference,

summing means coupled to the outputs of said plurality of comparison means to provide a summed signal indicative of the sum of the outputs of said comparison means to provide a composite signal for transmission,

receiver means responsive to said transmitted composite signal including means for detecting the amplitude of said composite signal for generating a series of proportional receiver reference signals each separate one indicative of a separate input signal and including a plurality of receiver comparison means each responsive to said composite

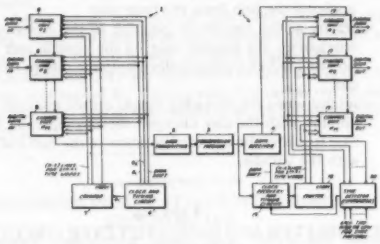
signal and one of said receiver reference signals to provide at an output a replica of one of said input signals.

4,498,167

TDM COMMUNICATION SYSTEM

James H. Bowen, Williamsburg, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,695
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—44 **22 Claims**



1. A time division multiplex communication system comprising:

a multiplexer to multiplex each of M digital data sources into a multiplex frame including a serial pattern of M data words each made up of n serial bits of which at least one bit is a synchronization bit, at least one other bit indicates the direction of the data transition or data level, and the remaining $n-2$ bits represent one of $N=(n-2)$ code words which indicates the time of transition of the digital data source relative to the time of the beginning of the multiplex frame, where M is an integer greater than one and n is an integer greater than two, said multiplexer including

first means to generate in time sequence N different code words each defining a different one of said N time slots, said first means including a first clock and timing circuit to provide first and second time shifted clock signals and a first counter coupled to said first circuit to provide said N code words, and

M second means each coupled to a different one of said M sources and to said first means to detect a data transition in said data of an associated one of said M sources, to provide an associated one of said N code words in response to detection of said data transition, to provide at least one bit indicating the direction of said transition and to provide at least one additional bit for a synchronization bit, each of said M second means being coupled in cascade with respect to each other to provide a serial time multiplexed output for said multiplexer including said associated one of said N code words, said one bit and said one additional bit from each of said M second means; and

a demultiplexer coupled to said multiplexer to demultiplex said M digital data from said multiplexed output including

third means to generate in time sequence said N code words in response to said multiplexed output,

M fourth means each coupled to said third means and in cascade with respect to each other and said multiplexed output to extract said M digital data from said multiplexed output, and

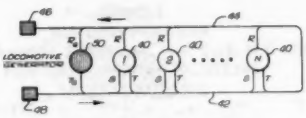
fifth means coupled to each of said M fourth means and to said third means to detect a synchronization pattern provided by each of said one additional bit to synchronize said third means to said first means.

4,498,168

COMMUNICATION NETWORK AND METHOD FOR ITS USE

Chong-Wei W. Tseng, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 13, 1982, Ser. No. 449,083
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—85 **18 Claims**



1. A data communications network, comprising:

a unidirectional data bus, including an outbound bus and an inbound bus connected in series, and bus temination means at opposing ends of said unidirectional bus;

a plurality of data stations, each having data transmitting means coupled to said outbound bus, for transmitting packets of data onto said outbound bus, sensing means also coupled to said outbound bus, for detecting the transmission of a data packet on said outbound bus from an upstream station, data receiving means coupled to said inbound bus, for receiving data addressed to the data station, and station control means, for transmitting a packet of data upon detection of a cessation of data transmission from stations upstream on said outbound bus; and

locomotive generator means, not part of any of said data stations, and having transmitting means for generating a data train preamble and transmitting it along said outbound bus, and locomotive generator control means, for initializing generation of new data train preambles in accordance with a predefined plan;

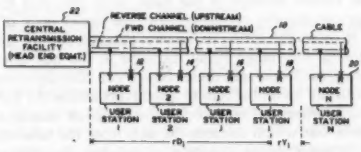
whereby each of said stations, if ready to transmit data, adds a data packet to the next passing data train upon sensing cessation of data transmission on said outbound bus, whereby each of said stations receives data packets designated to it from said inbound bus, and whereby each data train passes along said outbound bus and said inbound bus, before being absorbed by said bus termination means.

4,498,169

MULTIACCESS BROADCAST COMMUNICATION SYSTEM

John M. Rozmus, Lilburn, Ga., assignor to Scientific Atlanta, Inc., Atlanta, Ga.

Filed Mar. 14, 1983, Ser. No. 475,015
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—85 **7 Claims**



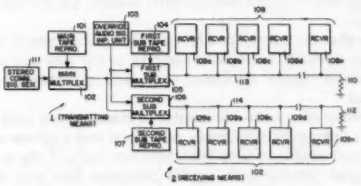
1. A communication system in which a multiplicity of communications stations are connected at a multiplicity of nodes disposed successively along a multichannel transmission medium, each of said stations having means connected to said medium for receiving messages transmitted in one of said channels along said medium from said nodes and retransmitting said messages in another of said channels to all of said nodes, for providing multiple access to said medium from said stations for the transmission of said messages without colli-

sions, said system comprising means in each of said stations for formatting each of said messages with a portion in the heading thereof which represents the length of said message, means for transmitting said message along said one channel to said retransmitting means, means in each of said stations responsive to the length portion of a preceding received message on said other channel for providing access to said one channel of said medium after a delay from the receipt of said preceding message equal to or greater than the difference between the length of said preceding message and the propagation time in said medium from the node at which said station is connected to said retransmission means and back to said last named node.

4,498,170
TIME DIVIDED DIGITAL SIGNAL TRANSMISSION SYSTEM

Toyota Noguchi, Kyoto; Michio Okamoto, Ikoma; Tadafumi Nishimura, Takarazuka; Yukio Sugimoto, Katano; Mamoru Kaneko, and Kenjiro Nakayama, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 23, 1982, Ser. No. 371,493
Claims priority, application Japan, Apr. 23, 1981, 56-62040
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.1 **2 Claims**



1. A time divided digital signal transmission system comprising a transmitting means, a sub multiplexing means and a receiving means;

wherein said transmitting means comprises: a plurality of analog signal input terminals for inputting analog signals; a clock generator for generating a clock signal; a synchronous signal generator operatively coupled to said clock generator for generating a synchronous signal; a plurality of delta modulators operatively coupled to said analog signal input terminals, said clock generator, and said synchronous signal generator for converting said analog signals to digital signals under the control of said clock signal and said synchronous signal; a multiplexer operatively coupled to said delta modulators for multiplexing said digital signals so as to obtain a multiplexer digital signal;

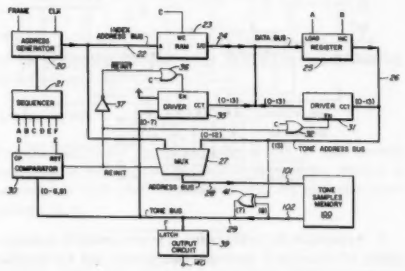
wherein said sub multiplexing means comprises: a sub demultiplexer operatively coupled to said multiplexer for demultiplexing said multiplexed digital signal so as to obtain said digital signals; a plurality of sub analog signal input terminals for inputting sub analog signals; a sub delta modulator operatively coupled to said sub analog signal input terminals for converting said sub analog signals to sub digital signals; an override digital signal input terminal for inputting an override digital signal; a sub multiplexer operatively coupled to said sub demultiplexer, said sub delta modulator and said override digital signal input terminal for multiplexing said digital signals, said sub digital signals and said override digital signal such that said sub digital signals and said digital signals are alternately assigned to time intervals, and said override digital signal is assigned to the time intervals of said alternately assigned sub digital signals and digital signals so as to obtain a further multiplexed signal to be transmitted to said receiving means; and a sync/clock detector operatively coupled to said multiplexer for detecting and regenerating said synchronous signal and said clock signal, and also operatively coupled to said sub demultiplexer, said sub delta modulator and said sub multiplexer, so as to control said sub demultiplexer, said sub delta modulator and said sub multiplexer;

and wherein said receiving means comprises: a clock regenerator operatively coupled to said sub multiplexer for regenerating said clock signal; a synchronous signal regenerator operatively coupled to said clock regenerator for regenerating said synchronous signal; a demultiplexer operatively coupled to said sub multiplexer for demultiplexing said multiplexed digital signal so as to obtain said digital signals; and a plurality of delta demodulators operatively coupled to said demultiplexer, said clock regenerator and said synchronous signal regenerator for demodulating said digital signals under the control of said regenerated clock signal and said synchronous signal so as to obtain said analog signals.

4,498,171
TONE SOURCE FOR TELEPHONE SYSTEMS

Ernst A. Munter, Kanata, and Andreas L. Aczel, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 6, 1983, Ser. No. 492,205
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.2 **3 Claims**



1. A tone source for providing a plurality of encoded tones for use in a telephone system, said tones being defined in a storage medium having an index page of stored tone index addresses for identifying first storage locations of corresponding tone samples having been sequentially stored therein, comprising:

first means for generating sequences of index addresses corresponding to address locations in the index page;

a memory means including storage locations corresponding to the index addresses, a data port, and an address port, the memory means being readable to provide an information word via the data port and writable with an information word directed thereto via the data port at a storage location defined by an instant one of the index addresses being asserted at the address port;

a register means having an output for asserting a registered information word and an input connected with the data port of the memory means, the register means being controllable to register an information word being asserted at its input, and to register an increment of said informaion word;

second means for generating a reinitialization signal in response to a predetermined charcteristic of an information word having been read from the storage medium;

switch means being operative in an absence of the reinitialization signal, for directing a registered information word to the address port of the storage medium to cause an information word of the corresponding storage location to be asserted at the data port of the storage medium, and for

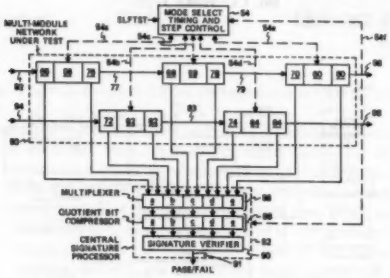
directing the increment to the data port of the memory means to cause a corresponding information word to be written at a storage location being defined by the instant index address, and being alternately operative in response to a presence of the reinitialization signal for directing the instant index address to the address port of the storage medium to cause an informaion word of the corresponding storage location to be asserted at the data port of the storage medium, to cause a corresponding information word to be written at the memory means storage location being defined by the instant index address;

whereby tone samples are available from the storage medium for use in the telephone system.

4,498,172
SYSTEM FOR POLYNOMIAL DIVISION SELF-TESTING OF DIGITAL NETWORKS

Dilip K. Bhavsar, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,161
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 **11 Claims**



1. Apparatus for self-testing a system which includes a plurality of functional network interconnected by interface networks comprising:

a first plurality of dual mode feedback shift registers, each connected to the input of respective ones of said plurality of functional networks, each of said feedback shift registers having a first mode of operation for generating a pseudo-random binary test sequence and a second mode of operation for evaluating responses by polynomial division to produce a succession of quotient bits;

a second plurality of dual mode feedback shift registers, each connected to the output of respective ones of said plurality of functional networks and to the input of a respective one of a plurality of interface networks, each of said feedback shift registers having a first mode of operation for evaluating responses by polynomial division to produce a succession of quotient bits and a second mode of operation for generating a pseudo-random binary test sequence; and

a central signature processor comprising:

compressor means for receiving quotient bit data output from each of said feedback shift registers when evaluating responses and generating a system-response signature by recursively compressing said quotient bit data from all of said plurality of feedback shift registers by polynomial division; and

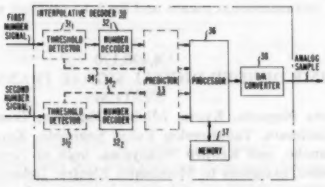
signature-verifying means for comparing said system-response signature with an expected fault-free signature and providing an output signal indicative of system status; and

control means for controlling the mode of operation of each of said feedback shift registers.

4,498,173
TECHNIQUE FOR DIGITAL SPLIT-CHANNEL TRANSMISSION USING INTERPOLATIVE CODERS AND DECODERS

Douglas O. Reudink, Sea Girt, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 17, 1982, Ser. No. 389,448
Int. Cl.³ H04B *7/06*
U.S. Cl. 371—30 **11 Claims**



7. A decoder capable of decoding a digital split-channel signal comprising a first and a second number signal including M-bits each which forms a digital number pair signal, the first and second number signals being received over separate channels or paths and the number pair signal being a representation of a digitally encoded analog signal sample, the decoder comprising

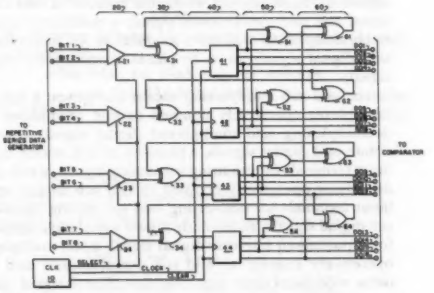
a number decoder (32_1, 32_2) capable of determining each of the numbers received separately in the first and second number signals associated with each split-channel signal; and

decoding means (**36–38**) capable of transforming each possible unique digital number pair signal into a unique analog signal sample, where predetermined ones of the possible digital number pair signals comprise first and second number signals of different values.

4,498,174
PARALLEL CYCLIC REDUNDANCY CHECKING CIRCUIT

Barry P. LeGresley, Port Moody, Canada, assignor to AEL Microtel Limited, Northlake, Ill.

Filed Aug. 25, 1982, Ser. No. 411,199
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **9 Claims**



1. A cyclic redundancy checking circuit for use in a data verification system including a comparator a data generator operated to provide a repetitive series of groups of parallel data bits, and a signal generator operated to periodically provide a clear signal associated with one group of said parallel data bits, said cyclic redundancy checking circuit comprising:

first coding means connected to said data generator, operable to provide a first coded signal associated with each group of parallel data bits;

first-in-first out storage means of predetermined capacity connected to said signal generator and said first coding means, said storage means initialized to a reset state in response to said clear signal, further operative to store a predetermined number of said first coded signals and further operative to provide a storage signal associated with each stored first coded signal;

second coding means connected to said storage means and said comparator, operative in response to said storage signal to provide a second coded signal; and

said first coding means further connected to said second coding means, operative in response to each group of parallel data bits and said second coded signal to provide said first coded signal.

4,498,175

ERROR CORRECTING SYSTEM

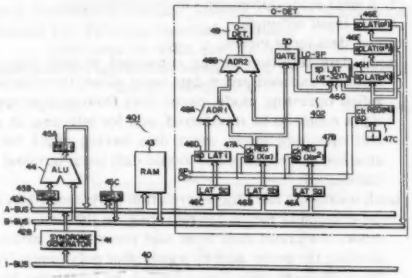
Masahide Nagumo, Kawasaki; Jun Inagawa, Yokohama, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 30, 1982, Ser. No. 430,002

Claims priority, application Japan, Jun. 15, 1982, 57-102816

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **4 Claims**



1. An error correcting system which receives double correction BCH codes each consisting of M data symbols and four parity symbols, each consisting of m bits and represented by the following generated polynomial:

$$g(x)=(x+1)(x+\alpha)(x+\alpha^2)(x+\alpha^3),$$

where α is the origin element of Galois field GF(2^m), and which find the roots of the following error location polynomial:

$$f_{(x)}=x^2+\sigma_1 x+\sigma_2,$$

thereby correcting errors in the double correction BCH codes, said system comprising:

means for storing the double correction BCH codes;

syndrome generating means for generating four syndromes S_0, S_1, S_2 and S_3 from the double correction BCH codes;

error location calculating means comprising:

a first multiplying/adding section for multiplying and adding the four syndromes S_0, S_1, S_2 and S_3 to obtain three syndromes S_a, S_b and S_c which are given as follows:

$$S_a=S_1^2+S_0S_2,$$

$$S_b=S_0S_3+S_1S_2,$$

$$S_c=S_1S_3+S_2^2$$

a second multiplying/adding section for performing multiplication and addition by substituting $\alpha^0-\alpha^{M+3}$ for x in the following polynomial obtained by transforming said error location polynomial $f_{(x)}$:

$$f'_{(x)}=S_a f_{(x)}=S_a x^2+S_b x+S_c,$$

thereby obtaining two products $S_a\cdot\alpha^2$ and $S_b\cdot\alpha$ and a sum $S_a\alpha^2+S_b\alpha+S_c$, utilizing the fact that the coefficients σ_1, σ_2 of said error location polynomial $f_{(x)}$ and the three syndromes S_a, S_b and S_c have the following relations according to the theory on the correction of said double correction BCH codes:

$$\sigma_1=S_b/S_a=\alpha^i+\alpha^j,$$

$$\sigma_2=S_c/S_a=\alpha^i\alpha^j;$$

an α^i, α^j detecting section for detecting α^i and α^j which satisfy $f'_{(x)}=0$; and

a third multiplying/adding section for adding α^i and α^j and multiplying α^i by α^j, thereby finding the coefficients σ_1, σ_2 which define error locations;

error pattern calculating means comprising a fourth multiplying/adding means for obtaining an error pattern e_i from α^i and α^j by performing the following multiplication:

$$e_1=(S_0\alpha^j+S_1)(\alpha^i+\alpha^j)^{-1},$$

said equation having been derived from the following division:

$$e_i=\frac{S_0\alpha^j+S_1}{\alpha^i+\alpha^j},$$

and for obtaining another error pattern e_j by performing the following addition:

$$e_j=S_0+e_i \text{ and}$$

correction means for correcting the errors in said double correction codes stored by said code storing means in accordance with the coefficients σ_1, σ_2 and the error patterns e_i, e_j.

4,498,176

METHOD AND APPARATUS FOR THE ERROR-FREE SYNCHRONIZATION OF ASYNCHRONOUS PULSES

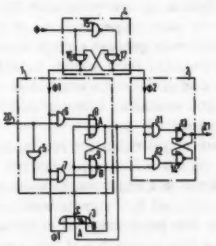
Wolfgang Wagner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,787

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106183

Int. Cl.³ H03K *3/295, 5/13*

U.S. Cl. 371—47 **8 Claims**



1. Method for the error-free synchronization of asynchronous pulses through logical interconnection of the asynchronous pulses with clock pulses of constant frequency by means of a flip-flop, which comprises comparing output voltages of the flip-flop with a predetermined threshold voltage for deter-

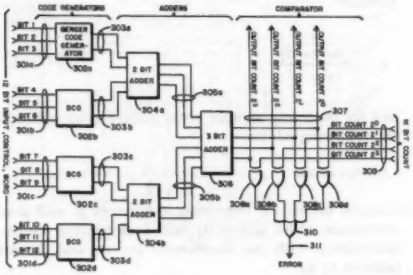
mining a metastable state of the flip-flop, and producing an inhibit signal therefrom and flipping the flip-flop into a third stable state by feeding back the inhibit signal during which its inputs are inhibited until the next clock pulse appears if a metastable state is present, for preventing an evaluation of the output voltages of the flip-flop.

4,498,177

M OUT OF N CODE CHECKER CIRCUIT

Brian R. Larson, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,487
Int. Cl.³ H03K *13/32*
U.S. Cl. 371—52 **7 Claims**



1. An M out of N code checker circuit apparatus for determining if number M bits, where M≦N and where such number M as is received by said circuit as binary-encoded first signals, is equal in number to that number of binary ones as between N binary input second signals, said circuit apparatus comprising:

code generator stage means for receiving said N binary input second signals in a plurality of parts, and for producing for each of said plurality of parts binary-encoded third signals representing the number of binary ones contained between the input signals of each respective part;

adder stage means for gathering all said binary-encoded third signals as are produced by said code generator means for each respective one of said plurality of parts, from said code generator stage means and for adding said binary-encoded third signals in order to produce as binary-encoded fourth signals that total binary ones bit count as is contained between said N binary input second signals; and

comparator stage means for receiving said binary-encoded fourth signals which represent the total binary ones bit count from said adder stage means, and for receiving said binary-encoded first signals which represent the number M, and for producing an error signal if said binary-encoded fourth signals and said binary-encoded first signals are not equal;

whereby said error signal results if said total binary ones bit count between said N binary input signals was not equal in number to M;

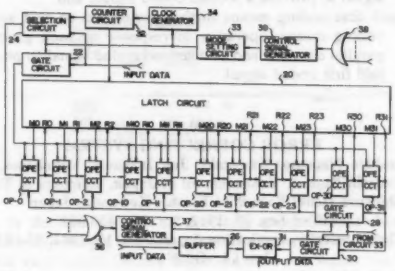
whereby said circuit apparatus thusly checks an M out of N code between said N binary input signals for any number M≦N.

4,498,178

DATA ERROR CORRECTION CIRCUIT

Masahide Ohhashi, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 17, 1983, Ser. No. 467,297
Claims priority, application Japan, Feb. 26, 1982, 57-29981
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **6 Claims**



1. A data error correction circuit comprising:

a data input terminal;

preset data input means;

input data selection means connected to said data input terminal and said preset data input means for selecting, in a first operating mode, preset data from said preset data input means to be transferred, and for selecting, in a second operating mode, input data having check bit data attached thereto supplied to said data input terminal to be transferred;

latch means for latching a correction polynomial M(x); and

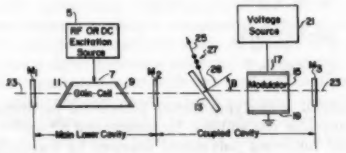
error correction means for receiving, in the first operating mode, the preset data from said preset input means, for dividing the preset data by a generator polynomial G(x) in terms of the modulo 2, and for storing remainder bit data obtained in said latch circuit as the correction polynomial M(x); and for receiving, in a second operating mode, input data having check bit data attached thereto from said data input terminal, for multiplying the input data by the correction polynomial M(x), and for dividing the input by the generator polynomial G(x) in terms of the modulo 2 to obtain a syndrome, thereby detecting and correcting an error in the input data.

4,498,179

MODULATED INFRARED LASER WITH TWO COUPLED CAVITIES

Robert J. Wayne, Berlin; Lanny M. Laughman, Bolton, both of Conn.; Robert J. Mongeon, East Longmeadow, Mass., and Peter P. Chenausky, Avon, Conn., assignors to The Unites States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1982, Ser. No. 403,439
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—27 **3 Claims**



1. A gas laser comprising:

a main resonant cavity including a gain cell positioned along an optical axis, a source of excitation coupled to said cell, a pair of windows at opposite ends of said gain cell providing an output of vertically polarized optical energy;

a coupled cavity axially aligned with said main cavity and including a polarization coupler angularly disposed at its Brewster angle to said axis for coupling energy out of said laser having a polarization normal to that from said gain cell, an electro-optic modulator spaced from said coupler in said coupled cavity along said axis for controlling the polarization of energy passing therethrough, a source of control voltage coupled to said modulator; and

a plurality of mirrors including first and second highly reflective end mirrors positioned at the respective opposite ends of said main and coupled cavities and a third low reflectivity mirror positioned between said cavities, the reflection of energy between said coupled cavity end mirror and third mirror being of a phase to reinforce output of said gain cell in order to sustain continuous wave operation.

4,498,180

METHOD OF MAINTAINING A PREDETERMINED BEAM DIRECTION IN A LASER PULSE TRANSMITTER AND AN APPARATUS FOR CARRYING OUT THE METHOD

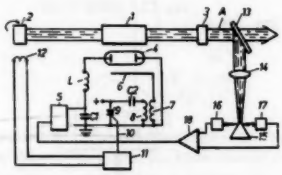
Anders S. Severinsson, Lindome, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 21, 1983, Ser. No. 459,976

Claims priority, application Sweden, Jan. 29, 1982, 8200502

Int. Cl.³ H01S *3/13*

U.S. Cl. 372—29 **10 Claims**



1. A method of maintaining a predetermined beam direction in a laser pulse transmitter having a laser resonator including a laser rod (1) with a rotating prism (2) at one end and an output coupler (3) at its other end, a flash lamp (4) which is energized to emit a flash pulse for pumping the laser rod (1), comprising measuring deviation of the beam from the predetermined beam direction, and adjusting in response to the magnitude and polarity of the deviation, a working point of the laser pulse transmitter to a working point corresponding to the predetermined beam direction.

4,498,181

LASER ARRANGEMENTS

Hugh Menown, Writtle; Barry P. Newton, Boreham, and Christopher V. Neale, Hatfield Peverel, all of England, assignors to English Electric Valve Company Limited, Chelmsford, England

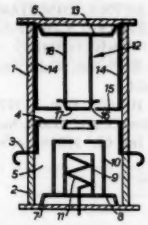
Continuation of Ser. No. 18,278, Mar. 7, 1979,. This application Sep. 23, 1983, Ser. No. 534,399

Claims priority, application United Kingdom, Mar. 9, 1978, 789306

Int. Cl.³ H01S *3/00*

U.S. Cl. 372—38 **6 Claims**

1. A laser arrangement including in its discharge circuit a switching thyratron having cathode means for preparing the thyratron to conduct forwardly, control grid means for triggering forward conduction of the thyratron and anode means for trapping and retaining plasma generated during a pulse of forward conduction from said anode means to said cathode means so that the switching thyratron is prepared to conduct protectively in the reverse direction when forward conduction ceases if said thyratron is subjected to a reversal of voltage



between said cathode means and said anode means, said anode means being devoid of a heater and cathode material whereby conduction in said reverse direction is prepared solely by the plasma trapped and retained by said anode means.

4,498,182

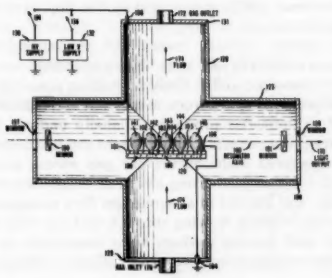
CONTINUOUS WAVE SPER LASER

John J. Macklin, Highlands; William T. Silfvast, Holmdel, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 18, 1982, Ser. No. 389,779

Int. Cl.³ H01S *3/03*

U.S. Cl. 372—62 **11 Claims**



1. A recombination laser comprising:

a resonant laser cavity which permits egress of lasing radiation therefrom,

excitation means for producing said lasing radiation in said resonant laser cavity;

said excitation means comprising at least two conductor strips having at least one gap, which at least one gap provides at least one intervening discharge path; and means for applying an electrical signal to said at least two conductor strips; and

a cell for containing a background gas and in which said at least two strips are located;

at least a portion of said at least two conductor strips being fabricated from a material which is converted into a plasma of ions as a result of the application of said electrical signal, which plasma cools and recombines to generate said lasing radiation; characterized in that

said applying means preionizes said at least one gap and applies an electrical signal of at least a few milliseconds duration for producing continuous wave operation of said laser, and

means are provided for causing said background gas to flow across said at least two strips.

4,498,183

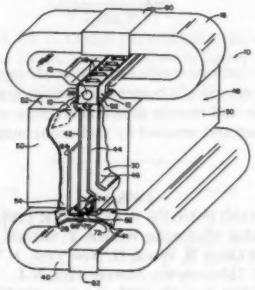
HIGH REPETITION RATE, UNIFORM VOLUME TRANSVERSE ELECTRIC DISCHARGER LASER WITH PULSE TRIGGERED MULTI-ARC CHANNEL SWITCHING

Jeffrey I. Levatter, Encinitas, Calif., assignor to Bernard B. Katz, La Jolla, Calif.

Division of Ser. No. 100,025, Dec. 3, 1979, Pat. No. 4,370,175. This application May 6, 1982, Ser. No. 375,750

Int. Cl.³ H01S *3/097*

U.S. Cl. 372—86 **8 Claims**



1. In an excimer gas laser including means defining an elongated laser beam generating resonant cavity chamber and a first transverse gas flow passageway, the improvement comprising:

anode means, cathode means and preionizing electrode means located in said laser beam generating chamber and interconnected to first apply an ionizing potential between said preionizing electrode means and said cathode means, and to thereafter produce a spatially uniform laser discharge between said cathode means and said anode means;

pulse triggered multichannel bar gap switch means connected to said preionizing electrode means and said anode means and located in a second gas flow passageway;

a gaseous medium flowing through said gas flow passageway, said gaseous medium being susceptible to ionizing breakdown upon application of sufficient voltage thereto; and

pulsed voltage means coupled to said pulse triggered multichannel bar gap switch means to repetitively apply brief, fast rising pulses thereto to create multichannel sparks therein only after the voltage applied has exceeded the ionizing breakdown of said gaseous medium flowing in said second gas flow passageway.

4,498,184

JINC-TRAP RESONATOR

Thomas R. O'Meara, Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1983, Ser. No. 484,327

Int. Cl.³ H01S *3/08*

U.S. Cl. 372—92 **8 Claims**

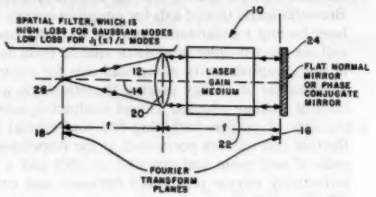
1. A Jinc-trap resonator, comprising:

(a) a Fourier transform lens defining an optical axis with right and left transform planes disposed along said axis one focal length from either side of the center of said lens;

(b) a laser gain medium disposed at a location along said optical axis between said lens and a first one of said right and left transform planes of said lens;

(c) reflecting means disposed at said first one of said transform planes of said lens; and

(d) a Jinc-trap spatial filter disposed at a second one of said right and left transform planes of said lens, whereby a Jinc



mode represented by the Bessel function $J_1(X)/(X)$ is effectively trapped at said second one of said transform planes while a corresponding transform mode that is nearly constant in amplitude and flat in phase is located at said first one of said transform planes.

4,498,185

PROCESS FOR PREVENTING BURN-OFF ON A CURRENT-CONDUCTING ELECTRODE FOR METALLURGICAL FURNACES AND ELECTRODES

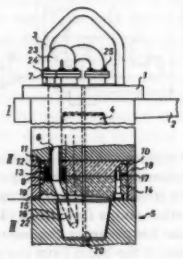
Emil Elsner; Dietfried Reiber, both of Gerlafingen; Josef Messmer, and Peter Kaiser, both of Biberist, all of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Oct. 14, 1982, Ser. No. 434,381

Claims priority, application Switzerland, Oct. 15, 1981, 6605/81

Int. Cl.³ H05B *7/08*

U.S. Cl. 373—93 **7 Claims**



1. An electrode for electric arc furnaces for the production of iron and steel comprising, a liquid cooled upper portion adapted to be inserted into an electrode holder connected to a source of electricity and having at least said upper portion contacting said holder formed of graphite and/or carbon for the conduction of said electricity, and a lower portion forming a consumable electrode tip detachably fastened to said upper portion, said upper portion including a conduit system for cooling liquid comprising at least three copper tubes extending longitudinally through said upper portion and spaced uniformly about the central axis thereof, the upper end of one of said tubes having an inlet for cooling liquid and the upper end of another of said tubes having an outlet for cooling liquid and said remaining upper and lower ends of said tubes being serially connected to provide a continuous flow of liquid from inlet to outlet, said upper portion comprising a separable upper part, a lower part having a threaded nipple for the removable attachment of said consumable electrode tip and an intermediate part, said conduit cooling system comprising straight copper tubes embedded in said upper part and extending outwardly from the top thereof and from the bottom thereof

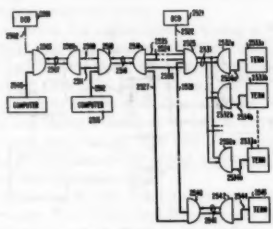
through said intermediate part, each tube having means at the top and bottom ends for securing said upper and lower parts in fixed abutment together, said conduit cooling system including shaped ducts in the lower part registering with said straight tubes to interconnect the bottom ends thereof and elbows interconnecting the tops thereof, and screw means securing said lower part to said intermediate part.

4,498,186

DATA SET DIAGNOSTIC SYSTEM

Jong-Yeong H. Hwang, Fremont, Calif.; Stevan J. Thayer, Freehold, and Bonnie A. Zimmer, Howell, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 196,157, Oct. 10, 1980, Pat. No. 4,398,297.
This application May 12, 1983, Ser. No. 494,111
The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.
Int. Cl.³ H03K *13/32*
U.S. Cl. 375—7 **6 Claims**



1. A method for initiating the communication of a diagnostic text from a first diagnostic communication device in a telephone voiceband data communication system to a second diagnostic communication device in said system, said system including a third diagnostic communication device which is adapted to communicate to said second device diagnostic texts received by said third device from said first device and intended for said second device, said second and third devices being co-located with respective data sets and at least one of said data sets being of the type adapted to receive input data and to transmit to the other of said data sets via a voiceband telephone channel a voiceband data signal representing said received input data, said method comprising the steps of

transmitting a select from said first device to said third device, said select comprising a first select control character, addresses respectively associated with said first and third devices, a character identifying said select as a select, and a second select control character, and

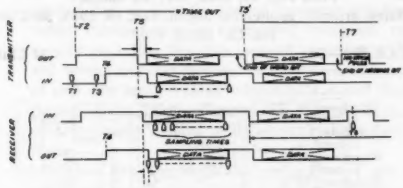
transmitting a downstream communication from said first device to said third device upon receipt by said first device from said third device of an upstream communication, said downstream communication being substantially identical to said select if said upstream communication includes a negative acknowledgement character and said downstream communication being a message if said upstream communication includes a positive acknowledgement character, said message comprising a first message control character, a header which includes an address associated with said second device and which is such as to indicate that said text is not intended for said third device, a second message control character, said text, and a third message control character.

4,498,187

ELECTRONIC POSTAGE METER HAVING PLURAL COMPUTING SYSTEMS

John H. Soderberg, Monroe, N.Y.; Alton B. Eckert, Norwalk, and Robert B. McFiggans, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 089,413, Oct. 30, 1979, Pat. No. 4,301,507.
This application Jun. 24, 1981, Ser. No. 277,171
Int. Cl.³ G06F *15/02*; H04L *25/38*
U.S. Cl. 375—117 **30 Claims**



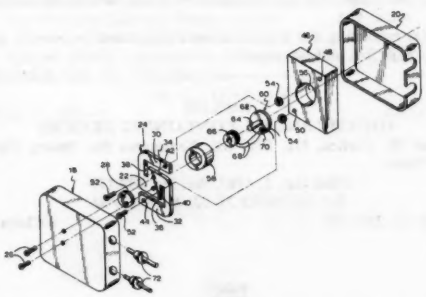
19. In a serial transmission terminal including means for transmitting messages in a format of a plurality of serially transmitted multiple bit words with each word having a start bit and a stop bit at determined signal levels, the improvement wherein said transmitting means comprises means connected to transmit the stop bit of the last word of each message with a signal level different than that of the other stop bits of the respective message.

4,498,188

ELECTRONIC STETHOSCOPE FOR MONITORING THE OPERATION OF A PROSTHETIC VALVE IMPLANTED IN A PATIENT'S HEART

Alan Hofer, Wantagh, N.Y., assignor to Stanton Magnetics, Inc., Plainview, N.Y.

Filed May 4, 1983, Ser. No. 491,547
Int. Cl.³ H04R *1/46*
U.S. Cl. 381—67 **4 Claims**



1. A stethoscope for monitoring a prosthetic valve for a heart, said stethoscope including a transducer comprising:

a casing;

a generally S-shaped spring member of magnetic material having a center portion mounted to an interior surface of said casing and a pair of free arm portions;

a weighted housing mounted to said spring member free arm portions;

a magnetic circuit mounted to said housing and adapted to move therewith, said circuit including an air gap and a coil whereby changes in said air gap induce a voltage change in an output voltage induced in said coil;

said spring including a portion disposed with respect to said housing for varying said air gap in response to movement of said housing with respect to said spring, said spring

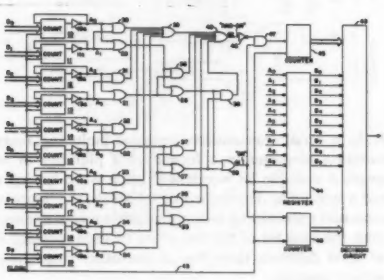
having a length and stiffness cooperating with the mass of said housing to produce a mechanical circuit having a resonant frequency substantially equal to the operating frequency of the valve to be monitored.

4,498,189

COMPARATOR SUITABLE FOR A CHARACTER RECOGNITION SYSTEM

Nobuhiko Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 350,037
Claims priority, application Japan, Feb. 18, 1981, 56-22563
Int. Cl.³ G06K *9/62*
U.S. Cl. 382—30 **24 Claims**



1. A method of comparing pattern signals to determine whether they are the same as or different from any of a great plurality of predetermined pattern signals, said comparison method comprising the steps of:

(a) storing incoming signals representing differences between the compared signals;

(b) clocking the stored signals to find maximum and minimum differences;

(c) detecting first and last signals to identify said maximum and minimum differences;

(d) finding and comparing the minimum with the next to minimum and the maximum with the next to the maximum; and

(e) extracting the maximums and minimums responsive to said first and last signals.

4,498,190

AQUATIC ANIMAL CONTAINING DEVICES

Fred W. Garlick, III, 3149 SE. Kensington St., Stuart, Fla. 33494

Filed Oct. 5, 1983, Ser. No. 539,177
Int. Cl.³ B65D *33/01;* **A01K** *63/00*
U.S. Cl. 383—28 **8 Claims**

1. A device for containing live aquatic animals comprising:

an entrance unit and

a mesh bag having an open end, a closed end and tubular central portion,

said entrance unit comprising:

a tubular member having a proximal end and a distal end joined by a central body portion, said proximal end defining a plane normal to the longitudinal axis of said member and said distal end defining a plane that is angled with respect to said axis,

a flexible flap cantilevered at one end to said central body portion of said tubular member distally of said proximal end, the other free end of said flap being substantially coincidental with the portion of said distal end most distal from said proximal end, said flap extending fully across said distal end, and

a bag holding means,

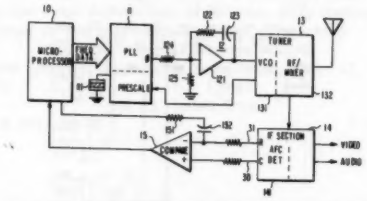
said open end of said bag being held about said central body portion of said tubular member by said holding means.

4,498,191

DIGITAL AUTOMATIC FREQUENCY CONTROL WITH TRACKING

Terrence E. Rogers, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Jun. 6, 1983, Ser. No. 501,685
Int. Cl.³ H03J *7/02;* **H04B** *1/26*
U.S. Cl. 455—164 **5 Claims**



1. In a microprocessor controlled phase locked loop tuning system of the type wherein a microprocessor is responsive to a user input frequency selection to produce an output to a programmable frequency divider in the phase locked loop which determines a nominal frequency of a local oscillator in a tuning system, said tuning system including said local oscillator and a mixer, and an intermediate frequency section tuned to an intermediate frequency, said microprocessor being connected to said intermediate frequency section for sampling said intermediate frequency to determine whether the local oscillator needs to be adjusted to accommodate a frequency offset in the recieved signal, the microprocessor using this information to generate an output to the programmable frequency divider which determines the amount of frequency offset of the local oscillator frequency away from the nominal value, the improvement comprising:

the connection between said microprocessor and said intermediate frequency section being an automatic frequency control detector means for providing either a logic "0" or a logic "1" output to said microprocessor depending on whether the output from said intermediate frequency section is above or below a predetermined threshold, said microprocessor being responsive to the output of said detector means to control the direction of change in the tuning of the local oscillator frequency during a frequency search mode of operation; and

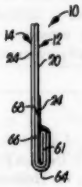
pulse coupling means connected between said microprocessor and the input of said detector means for coupling pulses from said microprocessor to said detector means during a frequency track mode of operation, said microprocessor entering said frequency track mode after the output of said detector means switches logic states a predetermined number of times.

4,498,192

BAG HAVING AN OVERLAPPED CLOSURE AND METHOD OF FABRICATING THE SAME

Arnold F. Becker, Solingen, Fed. Rep. of Germany, and Harold K. Johnson, Junction City, Kans., assignors to Mid America Machine Corp., Junction City, Kans.

Filed Jan. 28, 1983, Ser. No. 462,026
Int. Cl.[3] B65D *33/24*
U.S. Cl. 383—126 14 Claims



1. A bag comprising:
a pair of facially opposed first and second panels each presenting an inner and an outer face;
side margin closure means for interconnecting said panels with the inner faces thereof in opposed adjacency and presenting, with said panels, at least a pair of elongated side marginal juncture lines;
end closure means for permanently closing at least one end of said bag, said end closure means including
a first, elongated, marginal, transversely extending flap secured to said first panel adjacent said one end and presenting an outer face and an inner face, said first flap extending between and being defined at its lateral ends by a pair of spaced apart cut lines, at least one of said cut lines being located substantially at and along a portion of the length of one of said juncture lines,
said first flap being double folded upon said first panel such that the outer face of the first flap engages said outer face of the first panel at a first region of said first panel, and said inner face of said first flap engages said outer face of the first panel at a second region adjacent said first region;
a second, marginal, transversely extending flap secured to said second panel and presenting an outer face and an inner face, said second flap extending laterally from and being defined at one of its lateral ends by said one cut line;
said second flap being folded over said first flap, with at least a portion of the inner face of the second flap being in engagement with said outer face of said first panel at a third region adjacent said second region; and
means for adhesively and permanently securing said second flap inner face to said third region.

8. A bag-forming tubular container, comprising:
a tubular body having—
a pair of elongated, opposed, flexible first and second panels each formed of a plurality of facially opposed plies and presenting a transverse upper terminal edge, a transverse lower terminal edge and spaced side margins extending between said upper and lower edges;
a pair of gusset panels respectively interconnected to opposed adjacent side margins of said first and second panels, each of said gusset panels having an upper terminal edge and a lower terminal edge, said gusset panels, and said first and second panels, cooperatively presenting a plurality of elongated juncture lines,
said upper terminal edges of said first, second and gusset panels cooperatively defining a substantially continuous, flush closure end; and
a pair of relatively short, laterally spaced cuts in said body extending from said closure end, said cuts being provided through only certain of said plies including the outermost ply while leaving at least one ply uncut, said cuts extending generally along the length of said panels for dividing said closure end into first and second foldable flap portions respectively including portions of said first and second panels.

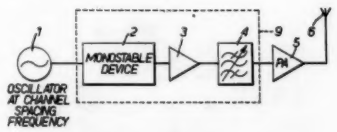
11. A method of forming a bag comprising the steps of:
providing a bag-forming tube having first and second, facially opposed panels each having an outer face and an inner face, and side margin closure means for interconnectiong said panels and presenting, with the panels, at least a pair of elongated side marginal juncture lines; and
permanently closing one end of said tube to form said bag, by—
cutting said tube adjacent one end and along the length thereof and at laterally spaced locations thereon to define therebetween an elongated, marginal, transversely extending first flap secured to said first panel and having an outer face and an inner face, at least one of said cuts being located substantially at and along a portion of the length of one of said juncture lines, said first flap being defined at its lateral ends by said cut lines;
folding said first flap upon said outer face of said first panel, and securing said first flap outer face to said outer face of the first panel at a first region thereon;
additionally folding said first flap upon said first panel until said inner face of said first flap engages said outer face of the first panel at a second region thereon adjacent said first region, and folding a second flap secured to said second panel over said first flap until a portion of the second flap overlies said first flap and extends beyond the first flap and engages said first panel outer face at a third region, and securing said second flap to said third region, said second flap extending laterally from and being defined at one of its lateral ends by said one cut line.

4,498,193

JAMMER TRANSMITTER

Christopher K. Richardson, Romsey, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Jun. 30, 1983, Ser. No. 509,397
Claims priority, application United Kingdom, Jul. 1, 1982, 8219063; Nov. 22, 1982, 8233226
Int. Cl.[3] H04K *3/00*
U.S. Cl. 455—1 8 Claims



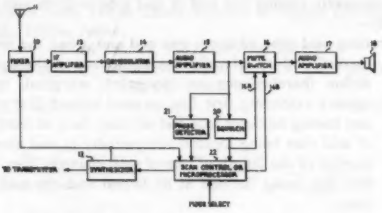
1. A jammer transmitter comprising a comb spectrum generator which includes pulse generator means adapted to produce a pulse train at a frequency corresponding to the channel spacing of signals to be jammed, and a bandpass filter which has a passband including a bandwidth occupied by the signals to be jammed and which is responsive to the pulse train for providing within this bandwidth comb generator output signals at harmonics of the pulse train frequency, said transmitter further comprising a power amplifier operative to amplify the comb generator output signals so as to produce jamming pulses and aerial means for radiating the jamming pulses, the width of the pulses of the pulse train being short enough to ensure that the harmonics of the pulse train frequency occur throughout the said bandwidth.

4,498,194

MULTIFREQUENCY SCANNING RECEIVER WITH PRIORITY FREQUENCY MONITORING

Johannes J. Vandegraaf, Lynchburg, Va., assignor to General Electric Company, Lynchburg, V.I.RGINIA

Filed Jan. 31, 1983, Ser. No. 462,313
Int. Cl.³ H03J *7/20*; H04B *1/26*
U.S. Cl. 455—166 **10 Claims**



1. In a scanning radio receiver having a microprocessor for causing the receiver to switch reception to each of a plurality of radio frequency channels, one of which is a priority channel and the others of which are nonpriority channels, and for stopping said switching in response to reception of a radio frequency signal, the improvement comprising:

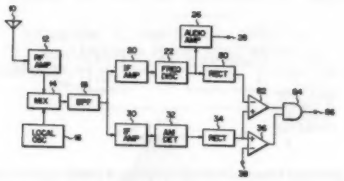
detector means coupled to the microprocessor for detecting the disappearance of a basebond information signal on a nonpriority channel and signalling the microprocessor to switch reception to said priority channel.

4,498,195

RADIO INTERFERENCE DETECTION DEVICE FOR USE IN A MULTI-CHANNEL ACCESS ANGLE-MODULATION RADIO SYSTEM

Tetsuo Ooi, Tokyo; Hiroshi Watanabe, Sendai; Akio Gotoh, Tokyo; Shuitsu Tsutsumi, Tokyo; Ryohei Oba, Tokyo; Koichi Ito, Tokyo, and Syouzi Huse, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Mar. 4, 1983, Ser. No. 472,246
Claims priority, application Japan, Mar. 5, 1982, 57-34650; Mar. 5, 1982, 57-34651
Int. Cl.³ H04B *1/16, 1/10*
U.S. Cl. 455—205 **5 Claims**



4. A radio interference detection device for use in a multi channel access angle-modulation radio system including at least one stationary station and at least one mobile station, said device comprising:

detecting means for AM-detecting a reception signal prior to angle demodulation and for producing an AM component of the reception signal;

rectifying means for rectifying an output signal from said detecting means; and

determining means for determining a level of an output signal from said rectifying means and for detecting interference in accordance with a determination result, said determining means comprising:

angle demodulating means for angle-demodulating the reception signal;

a first comparator for comparing a DC level of an output signal from said angle demodulating means and a level of the output signal from said rectifying means;

a second comparator for producing a detection signal when the level of the output signal from said rectifying means exceeds a predetermined level; and

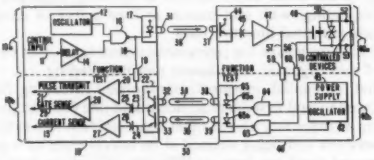
a gate for passing said detecting signal from said second comparator only when said first comparator produces a signal indicating that a demodulated output from said angle demodulating means is smaller than the output signal from said rectifying means.

4,498,196

TESTABLE OPTICALLY ISOLATED CONTROL CIRCUIT

Peter W. Holoyda; Dennis W. Hollenbeck, and William D. Hill, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 27, 1982, Ser. No. 402,368
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—607 **1 Claim**



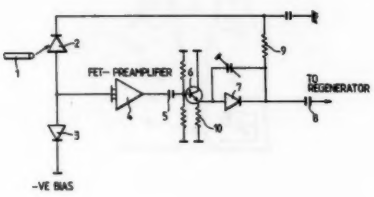
1. In a system including a control signal transmitting station physically isolated from a control signal receiving station for controlling the state of a controlled device, a method for monitoring at said transmitting station the operation of said system including the state of an operating relay for controlling said controlled device, the transmission of said control signal by said transmitting station, and the reception of said control signal by said receiving station, comprising the steps of:

1. providing transmitting means for transmitting said control signal from said transmitting station to said receiving station in response to an input signal applied to an input terminal of said transmitting station;
2. providing first sensing means for monitoring said transmitting means and providing a first monitoring signal indicative of the transmission of said control signal;
3. providing receiving means at said receiving station for receiving said control signal from said transmitting means and for changing the state of said operating relay for said controlled device in response thereto;
4. providing second sensing means for monitoring said receiving means and for transmitting a second monitoring signal indicative of the receipt of said control signal;
5. providing third sensing means for monitoring said operating relay for said controlled device and for transmitting a third monitoring signal indicative of actuation of said operating relay; and
6. applying a test control signal to said input terminal of said transmitting station of a duration sufficient to change the state of said first, second and third monitoring signals indicative of proper operation of said system but of insufficient duration to cause change of state of said controlled device whereby operation of said system is monitored and can be tested without disruption of the normal operation of said controlled device and whereby normal operation of said controlled device does not disrupt operation of said system.

4,498,197
OPTICAL RECEIVER

David P. M. Chown, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 7, 1982, Ser. No. 395,780
Claims priority, application United Kingdom, Jul. 7, 1981, 8120911
Int. Cl.³ H04B 9/00
U.S. Cl. 455—619 1 Claim

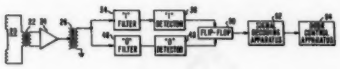


1. An optical receiver for receiving optical energy from an optical fibre transmission link, which includes a reverse-biassed p-i-n diode onto which light from the optical fibre link is directed, so that the diode generates a photo-current whose value depends on the magnitude of the incident optical power, a forward-biassed p-i-n diode connected in series with the reverse-biassed diode so that the photo-current flows in the forward-biassed diode, an amplifier whose input is connected to the junctions between the two diodes, and a third p-i-n diode connected to the output of the amplifier so as to pass the output of the amplifier, said third p-i-n diode being forward biassed and arranged to pass the same average current as do the first two-mentioned p-i-n diodes.

4,498,198
BINARY SIGNAL DECODING APPARATUS AND METHOD

Paul F. Buzard, Jefferson Borough, and Robert J. Harrington, Duquesne, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 17, 1982, Ser. No. 419,373
Int. Cl.³ H03D 3/00
U.S. Cl. 375—91 8 Claims



1. In apparatus for decoding an input signal word having a plurality of bits and a known transmission rate, said signal word including first and second coded message frequencies, the combination of

means for filtering and detecting a first message frequency signal having one of a high and low value in accordance with each bit of the comma free code of said first frequency,

means for filtering and detecting a second message frequency signal having one of a high and low value in accordance with each bit of the comma free code of said second frequency,

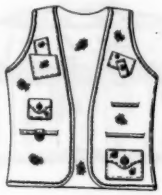
means providing a bit of a third signal for each bit of the first and second message frequency signals,

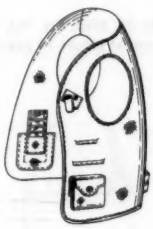
means for sampling each said bit of the third signal at a sampling rate that is a selected non-unity multiple of said transmission rate to provide a sample set for each bit of the third signal consisting of an odd plurality of samples,

means for determining the binary value of each bit of the third signal in accordance with the sum of the odd plurality of samples being greater than a predetermined number, and

means for establishing the binary value for all of the plurality of bits of the input signal word.

277,424
VEST
Gisela Beker, 1 Oceans West, 7 B5, Daytona Beach Shores, Fla. 32018
Filed Aug. 16, 1982, Ser. No. 408,707
Term of patent 14 years
U.S. Cl. D2—190

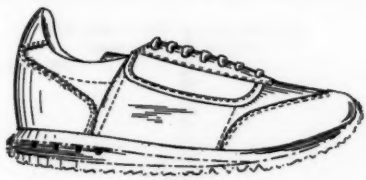




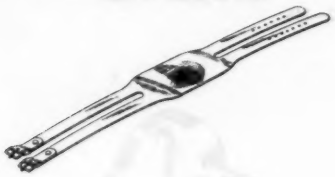
277,425
SAFETY HELMET
John B. Higginson, Sydney, Australia, assignor to Protector Safety Industries Limited, North Sydney, Australia
Filed Dec. 17, 1981, Ser. No. 331,786
Term of patent 14 years
U.S. Cl. D2—231

277,426
CAP
Constantine Eisinger, 7830 Aberdeen Rd., Bethesda, Md. 20814
Filed Aug. 10, 1982, Ser. No. 406,838
Term of patent 14 years
U.S. Cl. D2—246

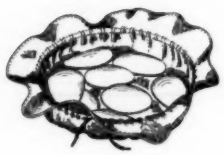
277,427
ATHLETIC SHOE UPPER WITH POCKET COVERING FLAP
Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A. Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 107,093, Dec. 26, 1979, Pat. No. Des. 261,823. This application Oct. 23, 1981, Ser. No. 314,135
Term of patent 14 years
U.S. Cl. D2—309



277,428
BELT
Maud K. H. Kjellen, Malmo, Sweden, assignor to Svenska Tobaks AB, Stockholm, Sweden
Filed May 3, 1982, Ser. No. 374,194
Term of patent 14 years
U.S. Cl. D2—380

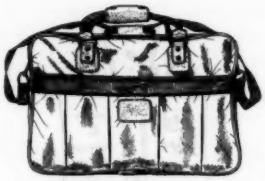


277,429
SEWING WEIGHT KIT
Jean LeBoutillier, 2465 Donavan Ave., Bellingham, Wash. 98225
Filed Oct. 26, 1981, Ser. No. 315,279
Term of patent 14 years
U.S. Cl. D3—18

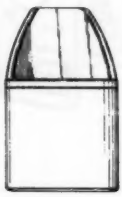


277,430
COMBINED CROCHET HOOK AND CAP
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Dec. 9, 1981, Ser. No. 329,077
Claims priority, application Japan, Aug. 24, 1981, 56-37390
Term of patent 14 years
U.S. Cl. D3—28

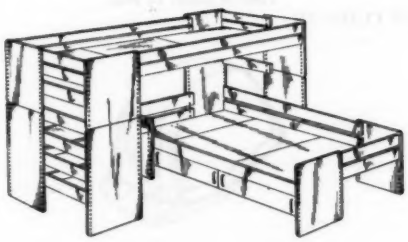
277,431
LUGGAGE
Harvey J. Bomes, Wellesey, Mass.; John J. Migliore, Barrington, R.I.; John Pulichino, Wellesey, and Jack Barber, Cambridge, both of Mass., assignors to American Tourister, Inc., Warren, R.I.
Filed Dec. 9, 1982, Ser. No. 448,053
Term of patent 14 years
U.S. Cl. D3—48



277,432
CHILD'S CHAIR
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 05039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed May 21, 1982, Ser. No. 380,683
Term of patent 14 years
U.S. Cl. D6—364



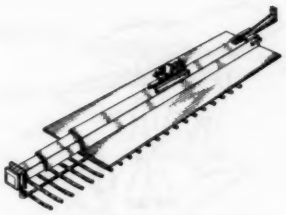
277,433
COMBINED BUNK BED, DESK AND STORAGE UNIT
James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049
Filed May 24, 1982, Ser. No. 381,054
Term of patent 14 years
U.S. Cl. D6—384



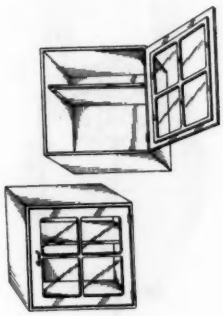
277,434
HOLDER FOR DISPOSABLE SAFETY RAZOR
Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Sep. 10, 1982, Ser. No. 416,468
Term of patent 14 years
U.S. Cl. D6—526

277,435
SUSPENDED HOLDER FOR PLANTS, CANDLES OR THE LIKE
David M. F. Chan, 1213 King Dr., El Cerrito, Calif. 94530, and Michael L. F. Chan, 1407 Arch St., Berkeley, Calif. 94708
Filed Sep. 15, 1983, Ser. No. 532,657
Term of patent 14 years
U.S. Cl. D6—403

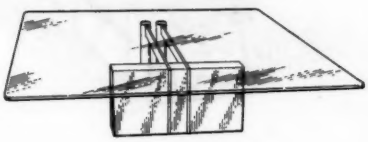
277,436
EXTENDABLE TIE RACK AND COVER THEREFOR
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Filed Dec. 27, 1982, Ser. No. 453,053
Term of patent 14 years
U.S. Cl. D6—315



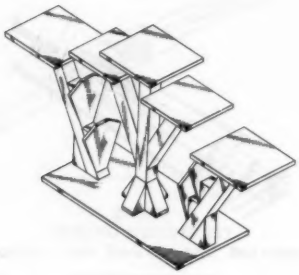
277,437
FURNITURE MODULE OR THE LIKE
Ristomatti Ratia, 198 W. Norwalk Rd., Darien, Conn. 06820, and Jukka Lehtiö, Venheenkatu 5„ SF-21200 Raisio, Finland
Filed Mar. 23, 1982, Ser. No. 361,033
Claims priority, application Finland, Oct. 2, 1981, 730/81
Term of patent 14 years
U.S. Cl. D6—470



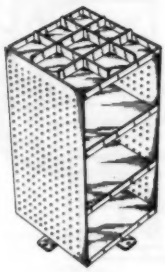
277,438
TABLE
Franco Passarello, Novara, Italy, assignor to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio, Besnate, Italy
Filed Aug. 9, 1982, Ser. No. 406,675
Term of patent 14 years
U.S. Cl. D6—483



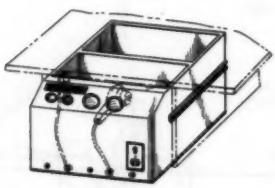
277,439
STEREO STAND
Lonzie Leath, 3810 Kimball Ridge Dr., Dallas, Tex. 75233
Filed Aug. 23, 1982, Ser. No. 410,352
Term of patent 14 years
U.S. Cl. D6—474



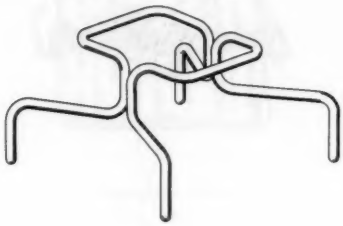
277,440
ROTATING TOOL STORAGE CABINET WITH SHELVES
Jerry G. Cartwright, Ellwood City, Pa., assignor to Wesco Manufacturing, Inc., Aurora, Ill.
Filed Aug. 23, 1982, Ser. No. 410,850
Term of patent 14 years
U.S. Cl. D6—476



277,441
STORAGE DRAWER FOR HAIR CARE IMPLEMENTS
Charles L. Handley, 6824 Orchard, Dearborn, Mich. 48126
Filed Jul. 19, 1982, Ser. No. 399,644
Term of patent 14 years
U.S. Cl. D6—510



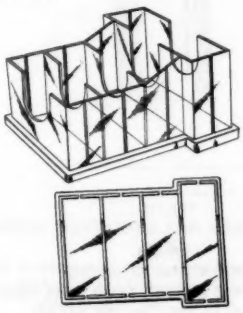
277,442
FRAME FOR A COMBINED TABLE AND SEATING UNIT
James L. Crowell, 135 S. 18th St., Philadelphia, Pa. 19103
Filed Aug. 24, 1982, Ser. No. 411,138
Term of patent 14 years
U.S. Cl. D6—499



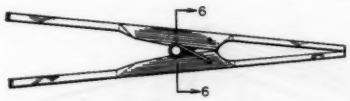
277,443
CHAIR
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,789
Term of patent 14 years
U.S. Cl. D6—366

277,444
TORTE PLATE
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,462
Term of patent 14 years
U.S. Cl. D7—5

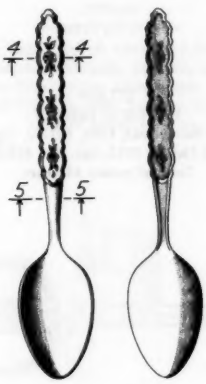
277,445
BAGEL SLICING JIG
Leonard Levine, 2978 Beechwood Blvd., Pittsburgh, Pa. 15217
Continuation-in-part of Ser. No. 455,220, Jan. 3, 1983, , and a continuation-in-part of Ser. No. 512,244, Jul. 11, 1983,. This application May 7, 1984, Ser. No. 608,036
Term of patent 14 years
U.S. Cl. D7—43



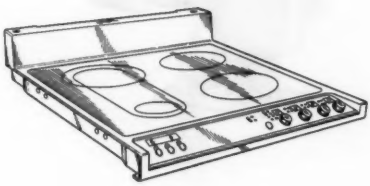
277,446
SPRING LOADED CHOP STICKS
Clive Hollinshead, 29572 Spotted Bull La., San Juan Capistrano, Calif. 92675
Filed Sep. 9, 1982, Ser. No. 416,122
Term of patent 14 years
U.S. Cl. D7—105



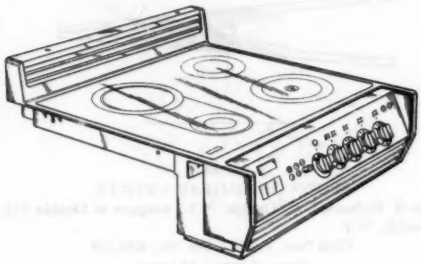
277,447
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 1, 1982, Ser. No. 438,329
Term of patent 14 years
U.S. Cl. D7—137



277,448
FLAT COOKING PANEL
Roland Vetter, Giengen, and Rolf Feil, Günzburg-Reisenburg, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 22, 1982, Ser. No. 370,621
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, MR 5381
Term of patent 14 years
U.S. Cl. D7—346

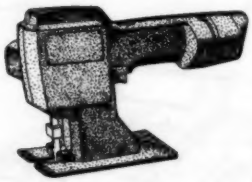


277,449
COOKING PANEL
Roland Vetter, Giengen, and Rolf Feil, Günzburg-Reisenburg, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 9, 1982, Ser. No. 396,653
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, MR 5401
Term of patent 14 years
U.S. Cl. D7—346



277,450
PAPER SCISSORS
Toru Hayashi, 1 Obora, Seki, Gifu, 501-32, Japan
Filed Oct. 6, 1982, Ser. No. 433,167
Term of patent 14 years
U.S. Cl. D8—57

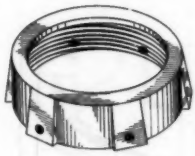
277,451
CORDLESS JIG SAW
Edward A. Barnik, Reisterstown, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 29, 1982, Ser. No. 373,229
Term of patent 14 years
U.S. Cl. D8—64



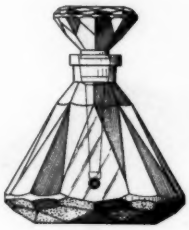
277,452
HUNTING KNIFE
Göran Ulvtorp, Kaprifolvägen 19, S-260 40 Viken, Sweden
Filed Oct. 18, 1982, Ser. No. 434,754
Claims priority, application Sweden, May 3, 1982, 82-1140
Term of patent 14 years
U.S. Cl. D8—99

277,453
HINGE PIN LOCK
Richard Wilman, 8451 W. McNab Rd., Tamarac, Fla. 33321
Filed Jun. 28, 1982, Ser. No. 392,716
Term of patent 14 years
U.S. Cl. D8—323

277,454
GROUNDING BUSHING
Ben W. Meinhardt, 6615 Hwy. 12, Maple Plain, Minn. 55359
Filed Sep. 13, 1982, Ser. No. 417,109
Term of patent 14 years
U.S. Cl. D8—397

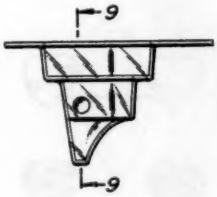


277,455
PERFUME BOTTLE
Eli Tordjman, Beverly Hills, Calif., assignor to Diamifray, Inc., Los Angeles, Calif.
Filed May 25, 1982, Ser. No. 381,974
Term of patent 14 years
U.S. Cl. D9—307



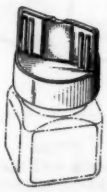
277,456
PERFUME BOTTLE
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Continuation-in-part of Ser. No. 294,615, Aug. 20, 1981,. This application May 25, 1982, Ser. No. 381,879
Claims priority, application France, Dec. 1, 1981, 814.118
Term of patent 14 years
U.S. Cl. D9—377

277,457
PACKAGING CONTAINER FOR A STOPCOCK OR THE LIKE
Raymond Lewandowski, New Providence, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed May 3, 1982, Ser. No. 373,942
Term of patent 14 years
U.S. Cl. D9—415



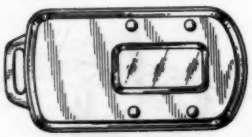
277,458
CONTAINER CLOSURE
Frank J. Neggers, Hopatcong, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 17, 1982, Ser. No. 442,329
Term of patent 14 years
U.S. Cl. D9—443

277,459
BOTTLE CAP
Ronald L. Baum, Bala Cynwyd; Abraham Leibson, Buckingham, and A. Neal Siegel, Phildelphia, all of Pa., assignors to Smith-Kline Beckman Corporation, Philadelphia, Pa.
Filed Nov. 26, 1982, Ser. No. 444,924
Term of patent 14 years
U.S. Cl. D9—443



277,460
CAULKING TUBE VALVE
Kenneth Vadnais, 20322 Beatrice, Livonia, Mich. 48152
Filed Apr. 13, 1982, Ser. No. 367,890
Term of patent 14 years
U.S. Cl. D9—447

277,461
PORTABLE CHRONOMETER
Robert M. Berger, Warren, Vt., assignor to Intercon Purchasing Industries (U.S.A.) Ltd., Forest Hills, N.Y.
Filed Jul. 16, 1982, Ser. No. 398,946
Term of patent 14 years
U.S. Cl. D10—31

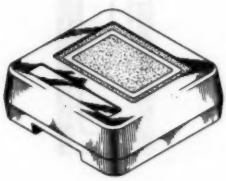


277,462
COMBINED FABRIC MEASURING AND COST COMPUTING DEVICE
Donald M. Jacobsen, Ladue; Tadmor Shalon, Clayton; Walter A. Thater, Kirkwood, and Steve Somogye, Jr., Jennings, all of Mo., assignors to The Measuregraph Company, St. Louis, Mo.
Filed Sep. 24, 1982, Ser. No. 422,954
Term of patent 14 years
U.S. Cl. D10—70

277,463
CHILD'S CLOTHES RACK AND GROWTH MEASURING AND REGISTERING UNIT
Lowell C. Bergstedt, and Marie C. Bergstedt, both of 47 Dartmouth St., San Francisco, Calif. 94134
Filed Aug. 25, 1982, Ser. No. 411,490
Term of patent 14 years
U.S. Cl. D10—71

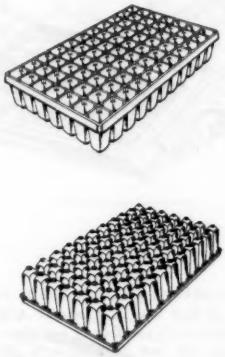
277,464
CHILD'S CLOTHES RACK AND GROWTH MEASURING AND REGISTERING UNIT
Lowell C. Bergstedt, and Marie C. Bergstedt, both of 47 Dartmouth St., San Francisco, Calif. 94134
Filed Aug. 25, 1982, Ser. No. 411,491
Term of patent 14 years
U.S. Cl. D10—71

277,465
PORTABLE EMERGENCY ALARM TRANSMITTER
John B. MacDonald, Dedham, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.
Filed Jan. 10, 1983, Ser. No. 456,767
Term of patent 14 years
U.S. Cl. D10—106

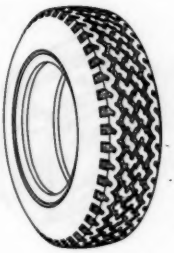


277,466
JEWELRY PIN
Edward H. Chien, Encino, Calif., assignor to Ooh La La!, Inc., Monterey Park, Calif.
Filed Nov. 26, 1982, Ser. No. 444,676
Term of patent 14 years
U.S. Cl. D11—41

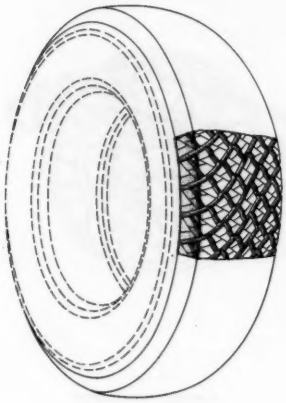
277,467
MULTIPLE PLANT CONTAINER
Tauno Turunen, Imatra, Finland, assignor to Enso-Gutzeit Oy, Imatra, Finland
Filed Dec. 15, 1982, Ser. No. 450,123
Claims priority, application Finland, Jun. 15, 1982, 530/82
Term of patent 14 years
U.S. Cl. D11—155



277,468
VEHICLE TIRE
Hideaki Nagayasu, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jul. 13, 1982, Ser. No. 397,867
Term of patent 14 years
U.S. Cl. D12—147

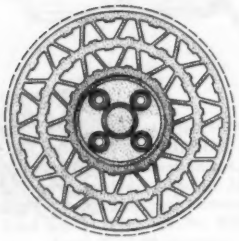


277,469
TIRE TREAD AND BUTTRESS
Ron L. Messer, Simpsonville, S.C., assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Sep. 24, 1982, Ser. No. 423,239
Term of patent 14 years
U.S. Cl. D12—151



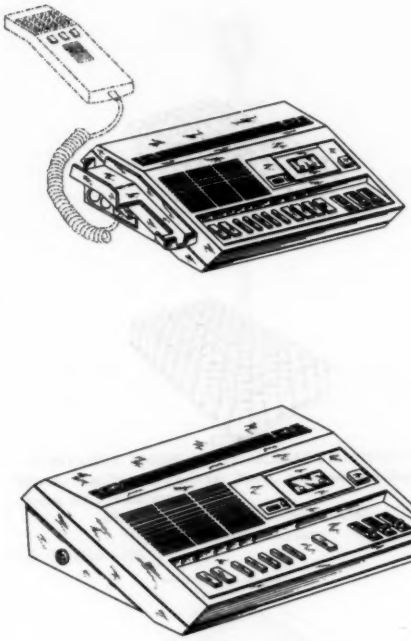
277,470
VAN RUNNING BOARD
Dominic Matti, P.O. Box 2296, Elkhart, Ind. 46515
Filed Sep. 27, 1982, Ser. No. 424,162
Term of patent 14 years
U.S. Cl. D12—203

277,471
FRONT FACE OF A VEHICLE WHEEL
Hans P. Uder, Durmersheim, Fed. Rep. of Germany, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jun. 23, 1982, Ser. No. 391,362
Claims priority, application France, Dec. 30, 1981, 814620
Term of patent 14 years
U.S. Cl. D12—211

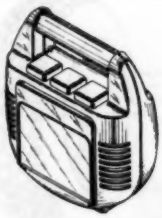


277,472
SAILBOAT
Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, Oceanside, Calif.
Filed Aug. 9, 1982, Ser. No. 406,851
Term of patent 14 years
U.S. Cl. D12—303

277,473
DICTATING MACHINE
Michael W. K. Young, Flushing, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed Apr. 5, 1982, Ser. No. 365,714
Term of patent 14 years
U.S. Cl. D14—3

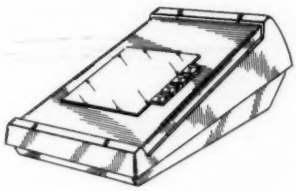


277,474
CASSETTE OPERATED MUSIC BOX
Akifumi Miura, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Japan
Filed Jun. 7, 1982, Ser. No. 385,687
Term of patent 14 years
U.S. Cl. D14—6

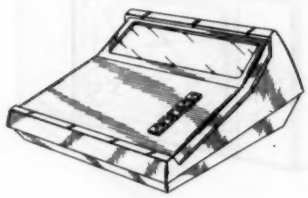


277,475
TAPE RECORDER
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1982, Ser. No. 397,822
Term of patent 14 years
U.S. Cl. D14—6

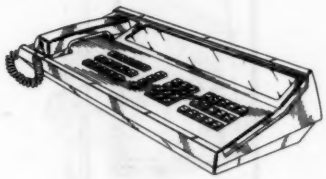
277,476
TELEPHONE DIGITAL DATA INTERFACE CONSOLE
Donald A. Foggia, Ocean, N.J., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Mar. 26, 1982, Ser. No. 362,140
Term of patent 14 years
U.S. Cl. D14—52



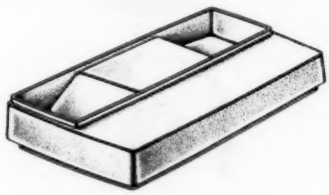
277,477
TELEPHONE BUSY LAMP FIELD CONSOLE
Donald A. Foggia, Ocean, N.J., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Mar. 26, 1982, Ser. No. 362,166
Term of patent 14 years
U.S. Cl. D14—52



277,478
TELEPHONE ATTENDANT CONSOLE
Donald A. Foggia, Ocean, N.J., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Mar. 26, 1982, Ser. No. 362,167
Term of patent 14 years
U.S. Cl. D14—58



277,479
TELEPHONE STAND
Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa.; Arthur L. Stern, Jr., Noblesville, Ind., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, New York, N.Y.
Continuation-in-part of Ser. No. 455,886, Jan. 5, 1983,. This application May 29, 1984, Ser. No. 614,752
Term of patent 14 years
U.S. Cl. D14—60

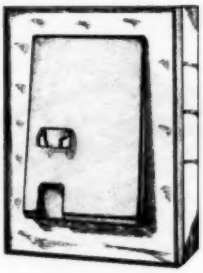


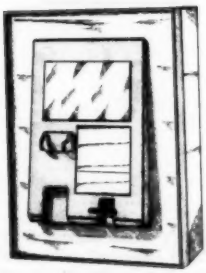
277,480

WALL TELEPHONE STAND OR SIMILAR ARTICLE

William V. Jackwicz, Spring Lake Heights; Sompoppol Jampathom, Ocean, both of N.J.; John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, New York, N.Y.

Filed May 10, 1984, Ser. No. 608,720
Term of patent 14 years
U.S. Cl. D14—61



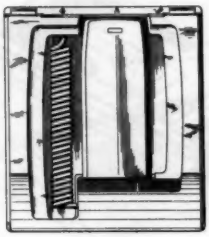


277,481

PORTABLE HOUSING FOR A TELEPHONE HANDSET

Dennis J. Gallant, Cincinnati, Ohio, and Robert T. Fussner, Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Jun. 11, 1982, Ser. No. 387,468
Term of patent 14 years
U.S. Cl. D14—65

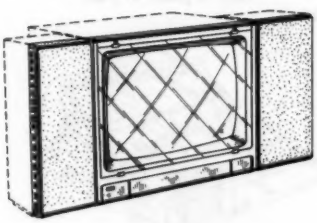


277,482

COMBINED VIDEO MONITOR AND LOUDSPEAKER SYSTEM FRONT PANEL ASSEMBLY

Hari Matsuda, Evanston; Anthony J. Cascarano, Lake Forest, and Charles M. Schwimmer, Chicago, all of Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.

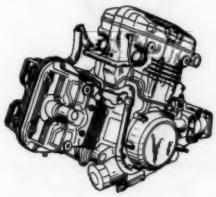
Filed Jun. 2, 1982, Ser. No. 384,401
Term of patent 14 years
U.S. Cl. D14—84



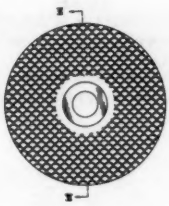
277,483
ANTENNA
Donald R. Newcomb, San Marcos, Tex., assignor to Butternut Electronics Co., Lockhart, Tex.
Filed Jul. 9, 1982, Ser. No. 396,709
Term of patent 14 years
U.S. Cl. D14—86

277,484
COMPUTER
Richard J. Dickinson, 36 The Paddock, Somersham, Huntingdon, Cambridgeshire, England
Filed Oct. 13, 1982, Ser. No. 434,162
Claims priority, application United Kingdom, Apr. 14, 1982, 1006157
Term of patent 14 years
U.S. Cl. D14—100

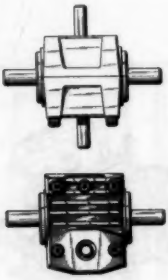
277,485
INTERNAL COMBUSTION ENGINE FOR MOTORCYCLE
Masato Iwakura, Asaka, and Mutsuo Hirose, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1982, Ser. No. 359,503
Claims priority, application Japan, Sep. 19, 1981, 56/41637
Term of patent 14 years
U.S. Cl. D15—3



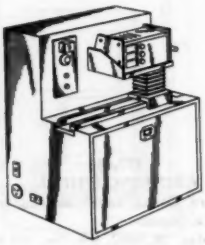
277,486
GRINDING WHEEL
Yoshikazu Yanagiura, Osaka, Japan, assignor to New Registon Co., Ltd., Kaizuka, Japan
Filed Mar. 18, 1982, Ser. No. 359,525
Term of patent 14 years
U.S. Cl. D15—126



277,487
WORM GEAR
Sven Nilsson, Partille, Sweden, assignor to SKF Nova AB, Gotebort, Sweden
Filed Nov. 22, 1982, Ser. No. 443,462
Claims priority, application Sweden, Jun. 18, 1982, 82-1616
Term of patent 14 years
U.S. Cl. D15—149

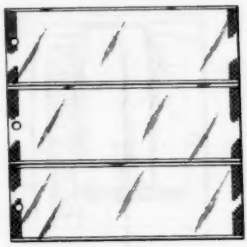


277,488
CONTACT PRINTER FOR PROOFING
Walter Loesch, Sydney, Australia, assignor to Kolorkraft Photography Pty. Ltd., New South Wales, Australia
Filed Apr. 28, 1982, Ser. No. 372,534
Term of patent 14 years
U.S. Cl. D16—29



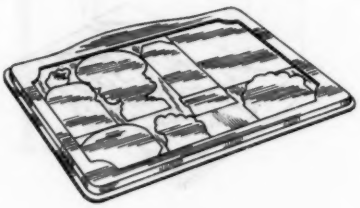
277,489
GREETING CARD OR SIMILAR ARTICLE
Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.
Filed Jun. 20, 1983, Ser. No. 506,704
Term of patent 14 years
U.S. Cl. D19—1

277,490
EMBOSSED POCKETED ALBUM PAGE
Roger A. Wenstrom; Donald E. Irvin, and William W. Holes, all of St. Cloud, Minn., assignors to The Holes-Webway Company, St. Cloud, Minn.
Filed Sep. 30, 1982, Ser. No. 430,262
Term of patent 14 years
U.S. Cl. D19—33



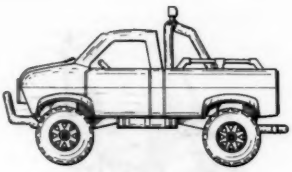
277,491
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,522
Term of patent 14 years
U.S. Cl. D21—65

277,492
COMBINED PUZZLE AND TRAY
Pamela J. Lockhart, Sterling Heights, and Daniel J. Cooney, Birmingham, both of Mich., assignors to CPG Products Corp., Minneapolis, Minn.
Filed Jul. 12, 1982, Ser. No. 397,641
Term of patent 14 years
U.S. Cl. D21—104

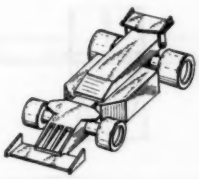


277,493
TOY VEHICLE
Ralph A. McQuarrie, Berkeley, Calif., assignor to Lucas Film, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 429,775
Term of patent 14 years
U.S. Cl. D21—130

277,494
TOY PICKUP TRUCK
Karl D. Lerch, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,610
Term of patent 14 years
U.S. Cl. D21—136



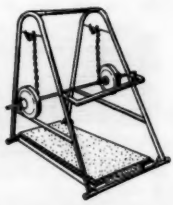
277,495
TOY RACE CAR
Andris Kalns, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 21, 1983, Ser. No. 459,773
Term of patent 14 years
U.S. Cl. D21—137



277,496
TOY DUCK
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,661
Term of patent 14 years
U.S. Cl. D21—160

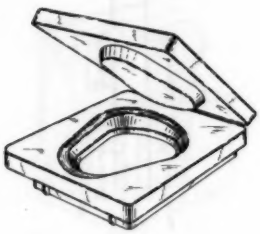
277,497
ABDOMINAL EXERCISER FOR ATTACHMENT TO CHAIR OR THE LIKE
Martin W. Johnson, R.R. #1, Box 95, Portland, N. Dak. 58274
Filed Nov. 1, 1982, Ser. No. 439,053
Term of patent 14 years
U.S. Cl. D21—191

277,498
EXERCISE PLATFORM
Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Duarte, Calif.
Filed Nov. 15, 1982, Ser. No. 441,445
Term of patent 14 years
U.S. Cl. D21—191

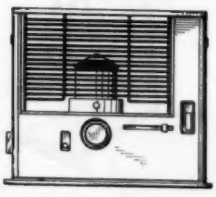


277,499
COMBINED SPRAYER AND CADDY
Joseph J. Slager, 2212 Emerson St., Manitowoc, Wis. 54220
Filed Nov. 24, 1982, Ser. No. 444,100
Term of patent 14 years
U.S. Cl. D23—35

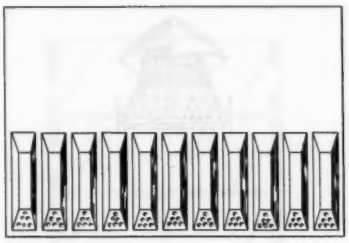
277,500
COMBINED TOILET SEAT ANE COVER
Leland S. McGill, P.O. Box 11, Portage, Ind. 46368
Filed Sep. 27, 1982, Ser. No. 423,720
Term of patent 14 years
U.S. Cl. D23—71



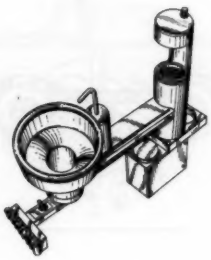
277,501
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Oct. 12, 1982, Ser. No. 434,142
Claims priority, application Japan, Apr. 9, 1982, 57/15398
Term of patent 14 years
U.S. Cl. D23—123



277,502
ROOF EDGE VENTILATOR
Jerry Williamson, and Keith Muters, both of P.O. Box 159, Woodburn, Oreg. 97071
Filed Sep. 13, 1982, Ser. No. 418,099
Term of patent 14 years
U.S. Cl. D23—153

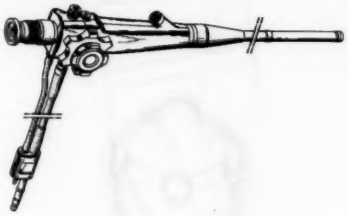


277,503
DENTAL CUSPIDOR
Danny M. Truette, Pineville, and George V. McGaha, Charlotte, both of N.C., assignors to The Pelton and Crane Company, Charlotte, N.C.
Filed Jun. 3, 1982, Ser. No. 384,802
Term of patent 14 years
U.S. Cl. D24—5



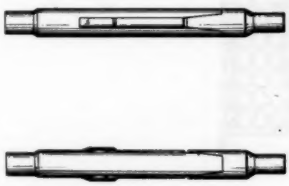
277,504
BASE FOR MATRIX BAND RETAINER
Dan W. Ericson, Ehrensvärdsgatan 6, S-212 13 Malmö, Sweden
Filed Mar. 19, 1982, Ser. No. 359,797
Claims priority, application Sweden, Sep. 21, 1981, 81-2039
Term of patent 14 years
U.S. Cl. D24—10

277,505
ENDOSCOPE
Hiroaki Kubokawa, and Koichiro Ishiwara, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Sep. 14, 1982, Ser. No. 417,915
Claims priority, application Japan, Mar. 19, 1982, 57-11780
Term of patent 14 years
U.S. Cl. D24—17

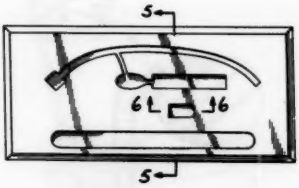


277,506
NEEDLE-LESS INJECTION INSTRUMENT
Pierre Ibis, Billere, France, assignor to Bearn Mecanique Aviation S.A., Billere, France
Filed Mar. 10, 1982, Ser. No. 356,327
Claims priority, application France, Sep. 15, 1981, 81-33-29
Term of patent 14 years
U.S. Cl. D24—24

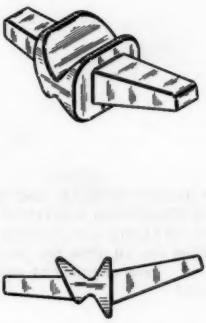
277,507
FINGER LANCING DEVICE
Didya Levy, 2017 E. 17th St., Brooklyn, N.Y. 11229
Filed Mar. 26, 1982, Ser. No. 362,160
Term of patent 14 years
U.S. Cl. D24—28



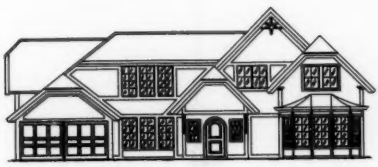
277,508
ENDOTRACHEAL INTUBATION KIT TRAY
Michael W. Clair, 8806 Willis Ave., Panorama City, Calif. 91402
Filed May 24, 1982, Ser. No. 381,550
Term of patent 14 years
U.S. Cl. D24—31



277,509
GREAT TOE METATARSAL PHALANGEAL IMPLANT
Bruce R. Lawrence, Oceanside, and James M. Christensen, San Diego, both of Calif., assignors to Sutter Biomedical Inc., San Diego, Calif.
Filed Jul. 1, 1982, Ser. No. 394,636
Term of patent 14 years
U.S. Cl. D24—33



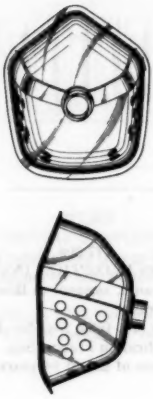
277,510
DETACHED HOUSE
Björn Fogler, Hönö , Sweden, assignor to Classic Hus AB, Gothenburg, Sweden
Filed Nov. 10, 1982, Ser. No. 440,715
Term of patent 14 years
U.S. Cl. D25—17



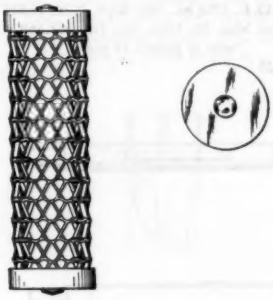
277,511
OUTDOOR LIGHT
Madhu Patel, Skokie, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 26, 1982, Ser. No. 371,714
Term of patent 14 years
U.S. Cl. D26—68

277,512
COMBINED BACKSCRUBBER AND BACK SCRATCHER WITH REMOVABLE SPONGE ELEMENT
Aldo Colognori, 69 Lawton Ave., Cliffside Park, N.J. 07010
Filed Jan. 10, 1984, Ser. No. 569,747
Term of patent 14 years
U.S. Cl. D28—63

277,513
MEDICAL FACE MASK
David E. J. Parsons; Paul D. O'Reilly, and Ronald H. Crawford, all of Basingstoke, England, assignors to Vickers P.L.C., London, England
Filed Mar. 8, 1982, Ser. No. 355,763
Claims priority, application United Kingdom, Nov. 5, 1981, 1003437
Term of patent 14 years
U.S. Cl. D29—8



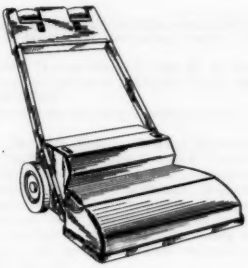
277,514
SUET FEEDER
Robert E. Bescherer, P.O. Box 23, Bristol, R.I. 02809
Filed Sep. 29, 1982, Ser. No. 426,903
Term of patent 14 years
U.S. Cl. D30—14



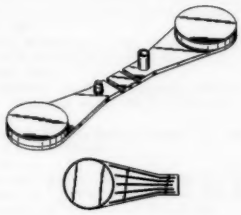
277,515
CLEANING RACK FOR SADDLES OR THE LIKE
Richard J. Secor, Rolesville, N.C. 27571
Filed Sep. 30, 1982, Ser. No. 430,277
Term of patent 14 years
U.S. Cl. D30—45

277,516
HAND-HELD VACUUM CLEANER
Glenn M. Hayden; Erik Miglins, and Larry Deovlet, all of P.O. Box 3981, Glendale, Calif. 91201
Filed May 13, 1983, Ser. No. 494,519
Term of patent 14 years
U.S. Cl. D32—18

277,517
CARPET AND RUG VACUUM CLEANER
Martin Wiese, South Bend; Thomas E. Shearer, Granger, and Dexter K. Lehman, Goshen, all of Ind., assignors to National Union Electric Corporation, Greenwich, Conn.
Filed Mar. 12, 1982, Ser. No. 357,430
Term of patent 14 years
U.S. Cl. D32—22



277,518
SPECTACLE LENS CLEANING IMPLEMENT
John G. Eggett, 124-9467 Charles Blvd., Surrey, B.C., Canada
Filed Sep. 27, 1982, Ser. No. 424,341
Term of patent 14 years
U.S. Cl. D32—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.D. & R.E. Barker Pty. Ltd.: *See*—
Barker, Allan D., 4,497,511, Cl. 285-158.000.

A. Natterman & Cie GmbH: *See*—
Durr, Manfred; and Fribolin, Hans-Ulrich, 4,497,158, Cl. 53-428.000.

A. Nattermann & Cie GmbH: *See*—
Durr, Manfred; and Fribolin, Hans-Ulrich, 4,497,157, Cl. 53-428.000.

A/S Bergens Mekaniske Verksteder: *See*—
Longberg, Leif; and Pedersen, Hakon S., 4,497,471, Cl. 254-372.000.

Abbott Laboratories: *See*—
Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, 4,497,900, Cl. 436-511.000.
Armstrong, Alan S.; Herrmann, John E.; and Howard, Lawrence V., 4,497,899, Cl. 436-510.000.

Abbou, Clement: *See*—
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,497,074, Cl. 3-1.000.

Abe, Hideaki: *See*—
Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, 4,497,323, Cl. 128-685.000.

Abe, Tokuji: *See*—
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, 4,497,722, Cl. 252-62.540.

Abel, Donald, to Morton Glass Works. Apparatus for cutting glass into various shapes. 4,497,477, Cl. 269-303.000.

Abelein, Dewayne M.: *See*—
Mosbrucker, Gregory A.; and Abelein, Dewayne M., 4,497,337, Cl. 137-247.250.

Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., to General Electric Company. Flame resistant thermoplastic blends of polyphenylene oxide, polyolefin and hydrated alumina. 4,497,925, Cl. 524-269.000.

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Bunting, Richard M.; and Acampora, Alfonse, 4,498,100, Cl. 358-31.000.

ACF Industries, Incorporated: *See*—
Ruhmann, Douglas C.; Vorwerk, Frederick E.; and Mundloch, James D., 4,497,258, Cl. 105-248.000.

Ackerman, Jacqueline B. Decorative dispensing container. 4,497,401, Cl. 206-131.000.

Aczel, Andreas L.: *See*—
Munter, Ernst A.; and Aczel, Andreas L., 4,498,171, Cl. 370-110.200.

Adams, Clarence R., to Boeing Company, The. Apparatus for precision grinding of end mounted objects. 4,497,139, Cl. 51-95.0LH.

Addie, David L.; and Ellsworth, Kenneth A., to Motorola, Inc. Button rectifier package for non-planar die. 4,498,096, Cl. 357-67.000.

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Schumaker, Eugene J., 4,498,125, Cl. 362-216.000.

Adkins, Richard C.; and Yost, James O., to Rolls-Royce Limited. Diffusion apparatus. 4,497,445, Cl. 239-590.000.

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Advance Engineering, Inc.: *See*—
Benatar, Victor; and Wilburn, Walter R., 4,497,599, Cl. 406-132.000.

Advani, Hira; and Cason, William C., to International Business Machines Corporation. Method for updating a program on a combined program diskette in an interactive text processing system. 4,498,142, Cl. 364-900.000.

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Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,497,074, Cl. 3-1.000.

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Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,497,478, Cl. 270-53.000.
Wetzel, Guenter, 4,497,481, Cl. 271-3.100.

Aggarwal, Sundar L.: *See*—
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,497,748, Cl. 260-665.00R.

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Aida, Hideaki: *See*—
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.

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Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.

Akahori, Shigetaka: *See*—
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, 4,497,395, Cl. 192-4.00A.

Akers, Brian: *See*—
Whitlam, Joseph E.; Richards, Alwyn H.; and Akers, Brian, 4,497,389, Cl. 182-150.000.

Akitsuki, Ikuo: *See*—
Itoh, Takuji; and Akitsuki, Ikuo, 4,497,909, Cl. 502-262.000.

Akiyama, Kazuhiro, to Fuji Photo Optical Co., Ltd. Motor-driven film winding mechanism. 4,497,555, Cl. 354-173.100.

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Akiyama, Tetsuo, to Universal Pioneer Corporation. Address data searching method for data recording medium reproducing device. 4,498,158, Cl. 369-32.000.

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Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.

Akiyama, Yoshinori: *See*—
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.

Akutsu, Yoji: *See*—
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.

Alabama Power Company: *See*—
Oliver, Roland A. G., 4,497,630, Cl. 434-224.000.

Albany International Corp.: *See*—
Nicholson, Charles B., 4,497,709, Cl. 210-489.000.
Petterson, De Witt R.; Skelton, John; and Brookstein, David S., 4,497,866, Cl. 428-365.000.

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Moore, William T.; and Albright, John W., 4,497,823, Cl. 514-512.000.

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Howell, Samuel G.; and Birchall, William R., 4,497,782, Cl. 423-184.000.
Allen, Ralph; Moore, David A.; and Quinton, Edward F., to Leslie Hartridge Limited. Phase-angle checking apparatus. 4,497,201, Cl. 73-119.00A.
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Aldridge, Peter J.; and Harris, Stephen J., 4,498,082, Cl. 340-825.160.
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Chang, Irving B.; and Beckwith, Robert E., Jr., 4,497,921, Cl. 524-59.000.
Allis-Chalmers Corp.: *See*—
Berti, Jerome L.; and Patchen, Paul J., 4,497,497, Cl. 277-163.000.
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Allsop, Inc.: *See*—
Clausen, Eivind; and Allsop, James D., 4,498,113, Cl. 360-128.000.
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Alsthom-Atlantique: *See*—
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Flemm, Roy E.; and Morran, James R., 4,497,994, Cl. 219-109.000.
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Sasayama, Takao; and Amano, Matsuo, 4,497,302, Cl. 123-489.000.
Amax Inc.: *See*—
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,497,659, Cl. 75-109.000.
Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., 4,497,779, Cl. 423-72.000.
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Vashi, Devendra C., 4,497,667, Cl. 148-6.15R.
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Sebesta, Edward H., 4,497,684, Cl. 156-643.000.
Ament, Frank, to General Motors Corporation. Diesel fuel injection pump with solenoid controlled low-bounce valve. 4,497,298, Cl. 123-450.000.
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Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., 4,497,621, Cl. 425-145.000.
American Cyanamid Company: *See*—
Barber, William A., 4,497,783, Cl. 423-213.500.
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American Hospital Supply Corporation: *See*—
Sullivan, Michael D.; Murtfeldt, Robert L.; and Yelsey, Arthur R., 4,497,324, Cl. 128-736.000.
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Ammermann, Eberhard: *See*—
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AMP Incorporated: *See*—
Ashman, John J.; and Rupnik, David W., 4,497,984, Cl. 200-11.0DA.
Baker, Robert W., 4,497,531, Cl. 339-94.00M.
Bakermans, Johannes C. W.; and Grabbe, Dimitry G., 4,497,196, Cl. 72-405.000.
Galloway, Michael D.; Gingerich, David J.; and Shaffer, David T., 4,497,983, Cl. 200-5.00R.
Myers, Ronald W., 4,497,526, Cl. 339-17.0LC.
Shannon, Suel G., 4,497,530, Cl. 339-89.00M.
Ampex Corporation: *See*—
Cooper, J. Carl, 4,498,141, Cl. 364-728.000.
AMSTED Industries Incorporated: *See*—
Gain, Lorand H., Jr., 4,497,340, Cl. 137-556.000.
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Anderson, Vaughn R.: *See*—
Wintrell, Reginald; and Anderson, Vaughn R., 4,497,304, Cl. 123-527.000.
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Anic S.p.A.: *See*—
Giroldini, William; and Neri, Carlo, 4,497,739, Cl. 260-239.0BF.
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Takagi, Masatoshi; and Annaka, Wataru, 4,497,293, Cl. 123-196.00A.
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Nishioka, Akira; Aotani, Yoshimasa; and Yamasue, Kotaro, 4,497,888, Cl. 430-165.000.
Aoyama, Shuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Door lock apparatus of electric cooker. 4,497,993, Cl. 219-10.55C.
Appelson, Jay M. Stake-out curtains for automobiles. 4,497,515, Cl. 296-141.000.
Appropriate Technology Corporation: *See*—
Ingold, Daniel L.; and Stewart, Robert L., 4,497,436, Cl. 236-49.000.
Arakawa, Hideo; Kuniya, Keiichi; Chiba, Akio; and Shimizu, Seiki, to Hitachi, Ltd. Ceramic substrate with metal plate. 4,497,875, Cl. 428-620.000.
Arakawa, Satoshi: *See*—
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Aratani, Matsuhiko: *See*—
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Armco Inc.: *See*—
Lawson, John E., 4,497,592, Cl. 405-202.000.
Armour Pharmaceutical Company: *See*—
Orlowski, Ronald C.; and Seyler, Jay K., 4,497,731, Cl. 260-112.50T.
Seyler, Jay K.; Stahl, Glenn L.; and Orlowski, Ronald C., 4,497,732, Cl. 260-112.50T.
Armstrong, Alan S.; Herrmann, John E.; and Howard, Lawrence V., to Abbott Laboratories. Immunoassay for *Chlamydia trachomatis* antigens. 4,497,899, Cl. 436-510.000.
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Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, 4,497,900, Cl. 436-511.000.
Arnold, Don C., to Beatrice Foods Company. Shower head. 4,497,444, Cl. 239-587.000.
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Process and device for interrupting and starting the spinning process at an open-end spinning position. 4,497,166, Cl. 57-263.000.
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Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Aschwanden, Felix, to RCA Corporation. Slow genlock circuit. 4,498,103, Cl. 358-148.000.
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Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,498,004, Cl. 250-227.000.
Ashland Oil, Inc.: *See*—
Sawran, William R.; Turrill, Frank H.; Newman, John W.; Hall, Norman W.; and Ward, Clifford, 4,497,789, Cl. 423-447.400.
Ashman, John J.; and Rupnik, David W., to AMP Incorporated. Rotary switch assembly. 4,497,984, Cl. 200-11.0DA.
Assarsson, Per G.; and Nagasuye, Joseph H., to St. Lawrence Technologies Limited. Fermentation of glucose with recycle of non-fermented components. 4,497,896, Cl. 435-161.000.
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Celler, George K.; and Robinson, McDonald, 4,497,683, Cl. 156-603.000.
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,498,186, Cl. 375-7.000.
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,498,182, Cl. 372-62.000.
Martinez, Maria N., 4,498,146, Cl. 364-900.000.
Peterson, William A.; and Sines, John C., 4,498,128, Cl. 363-21.000.
Phelan, James J., 4,497,979, Cl. 179-18.00D.
Rainal, Attilio J., 4,498,122, Cl. 361-414.000.
Reudink, Douglas O., 4,498,173, Cl. 371-30.000.

Smoot, Lanny S., 4,498,001, Cl. 250-214.00A.
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Dean, Barry D., 4,497,928, Cl. 524-502.000.
Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, 4,497,702, Cl. 208-47.000.
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Austin Rover Group Limited: *See—*
Daniel, Neville H.; and Duncan, Hugh M., 4,497,297, Cl. 123-440.000.
Australian National University, The: *See—*
Sargeson, Alan M.; Herlt, Anthony J.; and Harrowfield, John M., 4,497,737, Cl. 260-239.0BC.
Autoliv AB: *See—*
Gueguen, Daniel; and Rothera, Jacques, 4,497,458, Cl. 242-107.40B.
Automatix Incorporated: *See—*
Libby, Charles J., Jr.; and Gaiman, Barry, 4,497,996, Cl. 219-124.340.
Automobiles Peugot/Automobiles Citroen: *See—*
Ferrand, Michel; and Durupt, Maurice, 4,497,394, Cl. 188-322.150.
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Temperley, Harry D.; and Joynes, Brian, 4,497,175, Cl. 60-581.000.
Windsor, Harry M.; and Mallion, Andrew J., 4,497,397, Cl. 192-0.076.
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Kramer, James H., 4,497,593, Cl. 405-212.000.
Landsness, Clifford A.; and Buehrle, Thomas M., 4,498,042, Cl. 324-54.000.
Bachman, Brett L.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
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Bade, Volkbert, to Th. Goldschmidt AG. Process for the preparation of betaines. 4,497,825, Cl. 514-556.000.
Bailly, Jean C.: *See—*
Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., 4,497,904, Cl. 502-104.000.
Baker, Jerry W.; Crus, Richard A.; and Haderle, Donald J., to International Business Machines Corporation. Method for assuring atomicity of multi-row update operations in a database system. 4,498,145, Cl. 364-900.000.
Baker, Robert W., to AMP Incorporated. Electrical connector. 4,497,531, Cl. 339-94.00M.
Baker, William E. Relief valve. 4,497,338, Cl. 137-467.000.
Bakermans, Johannes C. W.; and Grabbe, Dimitry G., to AMP Incorporated. Apparatus for performing operations on strip material. 4,497,196, Cl. 72-405.000.
Balder, Richard T.; and Knutsen, Michael P. Portable bird perch assembly. 4,497,278, Cl. 119-26.000.
Ball, William J.; and Stewart, David G., to British Petroleum Company p.l.c., The. Process for the production of catalysts based on crystalline aluminosilicates and the use of catalyst so produced. 4,497,969, Cl. 585-415.000.
Bally Manufacturing Corporation: *See—*
Ghosh, Atish; and Pasierb, John, 4,498,079, Cl. 340-725.000.
Banitt, Elden H., to Riker Laboratories, Inc. Cyclopentanone derivatives. 4,497,954, Cl. 546-221.000.
Bankier, Jack D.; and Gross, Dennis A., to Barristo, Ltd. Method of manufacturing abrasive articles. 4,497,694, Cl. 204-16.000.
Banon, Louis: *See—*
Moretti, Antonio; and Banon, Louis, 4,498,024, Cl. 310-54.000.
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., to Philip Morris Incorporated. Process for increasing the filling power of tobacco. 4,497,330, Cl. 131-291.000.
Baran, Anthony S., to RCA Corporation. Stencilling a unique machine-readable marking on each of a plurality of workpieces. 4,497,848, Cl. 427-106.000.
Barber-Colman Company: *See—*
Moyer, Robert C., 4,497,242, Cl. 98-115.300.
Barber, William A., to American Cyanamid Company. Exhaust emission catalyst. 4,497,783, Cl. 423-213.500.
Barbon, Alessandro: *See—*
Ghelli, Giovanni; and Barbon, Alessandro, 4,497,634, Cl. 8-94.260.
Barin, Ihsan; Gamroth, Michael; Hesse, Rolf; and Wirosoedirdio, Soegianto, to Klockner-Humboldt-Deutz AG. Method and apparatus for removing arsenic from an arsenic-containing material. 4,497,780, Cl. 423-88.000.
Barker, Allan D., to A.D. & R.E. Barker Pty. Ltd. Connectors for vessels or pipes. 4,497,511, Cl. 285-158.000.
Barker, Lynn M., to United States of America, Energy. Isentropic compressive wave generator impact pillow and method of making same. 4,497,873, Cl. 428-547.000.
Barnett, Allan E.: *See—*
Halluin, Albert P.; and Barnett, Allan E., 4,497,907, Cl. 502-235.000.
Barnhouse, Richard W. Van engine removal assembly. 4,497,469, Cl. 254-8.00B.
Barristo, Ltd.: *See—*
Bankier, Jack D.; and Gross, Dennis A., 4,497,694, Cl. 204-16.000.
Barta, Frank E. Method of making a dairy-based food product. 4,497,834, Cl. 426-42.000.
Barth, Peter: *See—*
Cioca, Gheorge; Feeley, George F.; Brabson, Joseph B.; and Barth, Peter, 4,497,862, Cl. 428-220.000.
BASF Aktiengesellschaft: *See—*
Hagen, Helmut; Markert, Juergen; and Wuerzer, Bruno, 4,497,651, Cl. 71-94.000.
Hecke, Paul; Burger, Arnulf; and Werther, Heinz-Ulrich, 4,497,081, Cl. 15-102.000.
Laemmermann, Fritz; Rindfleisch, Werner; Fabian, Wolfgang; and Polster, Rudolf, 4,497,120, Cl. 34-15.000.
Merger, Franz; and Towae, Friedrich, 4,497,963, Cl. 560-115.000.
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.
Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,497,819, Cl. 514-397.000.
Bates, William C.: *See—*
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Baugh, John L., to Hughes Tool Company. Hanger mechanism. 4,497,368, Cl. 166-208.000.
Bauman, Robert A., to Colgate-Palmolive Company. N-Alkylisostearamides as antistatic agents. 4,497,715, Cl. 252-8.800.
Baumann, Hansjorg W., to Lonza Ltd. Insulating insert for storage or transportation container. 4,497,859, Cl. 428-71.000.
Baumann, Wolfgang, to FA. ELGA Elektro-und Apparatebau GmbH. Method of braze-jointing metallic profile components. 4,497,428, Cl. 228-175.000.
Baxter Travenol Laboratories, Inc.: *See—*
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, 4,497,104, Cl. 29-419.00R.
Bayer Aktiengesellschaft: *See—*
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.
Kruckenberg, Winfried; and Schundehutte, Karl H., 4,497,736, Cl. 534-855.000.
Mennicke, Winfried, 4,497,734, Cl. 534-695.000.
Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, 4,497,868, Cl. 428-400.000.
Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, 4,497,821, Cl. 514-302.000.
Beachem, Ronald G., to Med-Tech Micrographics, Inc. Automatic x-ray microfilm reader. 4,497,572, Cl. 355-45.000.
Beall, Mark A. Guitar pick. 4,497,237, Cl. 84-322.000.
Beatrice Foods Company: *See—*
Arnold, Don C., 4,497,444, Cl. 239-587.000.
Beaver, Richard N.: *See—*
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,497,112, Cl. 29-825.000.
Bechtel National, Inc.: *See—*
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Becker, Arnold F.; and Johnson, Harold K., to Mid America Machine Corp. Bag having an overlapped closure and method of fabricating the same. 4,498,192, Cl. 383-126.000.
Beckman Instruments, Inc.: *See—*
Kaye, Wilbur I., 4,497,542, Cl. 350-335.000.
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Beimesch, Wayne E.; and Hortel, Thomas C., to Procter & Gamble Company, The. Energy efficient hydration process. 4,497,757, Cl. 264-13.000.
Belanger, Ernest. Wind-powered water-craft. 4,497,631, Cl. 440-8.000.
Belcher, Joe D. Apparatus for applying designs to wall structure. 4,497,114, Cl. 33-41.00D.
Belgard, Richard A.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
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Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.

Bell, Audrey R. Animal play and exercise structure. 4,497,279, Cl. 119-29.000.

Bell, David L., to BICC-Vero Electronics Limited. Circuit board installation. 4,498,118, Cl. 361-384.000.

Bell, Richard S., to Mighty-Mac, Inc. Exercise garment. 4,497,071, Cl. 2-94.000.

Beloit Corporation: *See*—
Flohr, Gary R., 4,498,137, Cl. 364-471.000.

Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., to Vsesojuzny Nauchno-Issledovatelsky, Proektno-Konstruktorsky I Tekhnologichesky Institut Kabelnoi Promyshlennosti "VNIIKP". Multiwire twisted conductor and device for coating twisted conductor wires. 4,497,867, Cl. 428-385.000.

Ben-Shmuel, Dan; and Zacuto, Philip, to Heat Extractor Inc. Heat extractor. 4,497,439, Cl. 237-53.000.

Benatar, Victor; and Wilburn, Walter R., to Advance Engineering, Inc. System for preventing clogging of the outlet orifice of a dispenser tank containing powdered reagent and auxiliary tank discharge means. 4,497,599, Cl. 406-132.000.

Bendix Corporation, The: *See*—
Meyer, Helmut P.; and Isliker, Gaston R., 4,497,633, Cl. 445-7.000.

Beney, Gilbert; and Combet, Michel, to Eimco-Secoma Societe Anonyme. Drilling and bolting turret. 4,497,378, Cl. 173-32.000.

Bennett, Robert A. Device for selecting numbers randomly. 4,497,486, Cl. 273-144.00B.

Benrud, Vernal M., to Sperry Corporation. Low input capacitance amplifier. 4,498,058, Cl. 330-300.000.

Benson Engineering & Mfg., Inc.: *See*—
Youngworth, Thomas H., 4,497,182, Cl. 62-151.000.

Benz, Ulrich: *See*—
Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, 4,497,821, Cl. 514-302.000.

Bercovici, Serge, to Cegedur Societe de Transformation de l'Aluminiu, Pechiney. Method of monitoring and controlling operating parameters of a machine for the continuous casting of strips between rolls. 4,497,360, Cl. 164-454.000.

Berejka, Anthony J.: *See*—
Tancrede, Jean M.; and Berejka, Anthony J., 4,497,936, Cl. 525-222.000.

Berger, Hermann, to Chemie Und Filter GmbH, Verfahrenstechnik KG. Switching circuit with a time delay device. 4,498,019, Cl. 307-132.00E.

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Bernstein, David H.: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
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Berthold, Robert V.: *See*—
Ward, Carl E.; and Berthold, Robert V., 4,497,650, Cl. 71-93.000.

Berti, Jerome L.; and Patchen, Paul J., to Allis-Chalmers Corp. Oil ring assembly with annular expander spring. 4,497,497, Cl. 277-163.000.

Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., to Standard Oil Company (Indiana). Composition for removing sulfur oxides from a gas. 4,497,902, Cl. 502-65.000.

Bertolet, Roy D.: *See*—
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Bertolino, Renee Z. Battery charge indicator. 4,497,881, Cl. 429-91.000.

Betts, Joseph E.: *See*—
Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., 4,497,925, Cl. 524-269.000.

Beuscher, Joseph J., to Brockway-Imco Inc. Blow pin assembly. 4,497,623, Cl. 425-525.000.

Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., to General Motors Corporation. Heat shielded, spark plug boot assembly. 4,497,532, Cl. 339-112.00R.

Bhavsar, Dilip K., to General Electric Company. System for polynomial division self-testing of digital networks. 4,498,172, Cl. 371-25.000.

Bialkowski, Gunter: *See*—
Peche, Gerhard; and Bialkowski, Gunter, 4,497,990, Cl. 200-144.00B.

BICC Public Limited Company: *See*—
Dench, Godfrey R. M., 4,497,537, Cl. 350-96.230.

BICC-Vero Electronics Limited: *See*—
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Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., to Perkin-Elmer Corporation, The. Virtual addressing for E-beam lithography. 4,498,010, Cl. 250-492.200.

Bilka, Kenneth P.: *See*—
Cherukuri, S. Rao; Bilka, Kenneth P.; and Hriscisce, Frank, 4,497,832, Cl. 426-5.000.

Birchall, William R.: *See*—
Howell, Samuel G.; and Birchall, William R., 4,497,782, Cl. 423-184.000.

Birukawa, Masahiro: *See*—
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.

Black & Decker Inc.: *See*—
Flack, John H., deceased; and Simpson, Frank F., 4,497,380, Cl. 173-117.000.

Blackwood, Rodger. Sulfur remelting. 4,497,635, Cl. 23-308.00S.

Blair, Timothy T.: *See*—
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,497,567, Cl. 355-3.0TR.

Blanchet, Pierre; and Recasens, Joseph, to Societe Europeenne des Produits Refractaires. Design of transverse-burner recuperative furnaces. 4,497,628, Cl. 432-179.000.

Blanrima Pty. Ltd.: *See*—
Maris, Wiltjie; and Moran, Robert, 4,497,559, Cl. 354-316.000.

Blanton, William A., to Chevron Research Company. Method and apparatus for controlled rate feeding of fluidized solids. 4,497,598, Cl. 406-114.000.

Blaseck, Klaus, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Arrangement for interconnecting conduits. 4,497,776, Cl. 422-159.000.

Blatter, Johann: *See*—
Sturzenegger, Christian; and Blatter, Johann, 4,497,991, Cl. 200-148.00A.

Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., to BP Chimie Societe Anonyme. Catalysts for the polymerization and copolymerization of ethylene and polymerization processes using these catalysts. 4,497,904, Cl. 502-104.000.

Blenkinsop, Philip T. Pet door with control circuit therefor. 4,497,133, Cl. 49-31.000.

Block Drug Company, Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,497,831, Cl. 514-717.000.

Bobrek, Pavlo. Control circuit for linearly controlling the speed and direction of an AC powered DC motor in accordance with the magnitude and polarity of a DC reference signal. 4,498,035, Cl. 318-345.00D.

Bockris, John O'M.; and Ottagawa, Takaaki, to Texas A&M University. Lanthanum nickelate perovskite-type oxide for the anodic oxygen evolution catalyst. 4,497,698, Cl. 204-129.000.

Bodenseewerk Geratetchnik GmbH: *See*—
Scheurenbrand, Hans, 4,497,206, Cl. 73-382.00R.

Bodewig, Peter W., to UTP Schweissmaterial GmbH & Co. Method and apparatus for metal arc welding with constant currents. 4,497,997, Cl. 219-137.0PS.

Boeing Company, The: *See*—
Adams, Clarence R., 4,497,139, Cl. 51-95.0LH.
Campbell, Dennis R., 4,497,461, Cl. 244-75.00R.
Hamatani, Tomio, 4,497,462, Cl. 244-129.500.
McCarthy, Karen; and Prochaska, Charles R., 4,497,602, Cl. 410-69.000.
Pinson, George T., 4,498,032, Cl. 318-37.000.

Boger, Manfred: *See*—
Drabek, Jozef; and Boger, Manfred, 4,497,746, Cl. 260-544.00C.

Bollenrath, Franz-Michael: *See*—
Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, 4,497,911, Cl. 521-56.000.

Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., to Xerox Corporation. Printing machine employing an operator replaceable interposition web and photoconductive member. 4,497,570, Cl. 355-16.000.

Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., to Burroughs Corp. Selector switch for a concurrent network of processors. 4,498,133, Cl. 364-200.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,497,446, Cl. 239-661.000.

Bone, David P.: *See*—
Gould, Max R.; Bone, David P.; and Hsieh, Fu H., 4,497,840, Cl. 426-560.000.

Bonis, Laszlo J., to Composite Container Corporation. Flexible heat-sealable sheet and bag made therefrom. 4,497,857, Cl. 428-35.000.

Bonne, Ulrich, to Honeywell Inc. Adaptive, modulating boiler control system. 4,497,438, Cl. 237-8.00R.

Bonnell, James M., to Tropicana Products, Inc. Process for the production of useful products from orange peel. 4,497,838, Cl. 426-429.000.

Booth, Ronald P., Sr., to Xerox Corporation. Copy processing system for a reproduction machine. 4,497,569, Cl. 355-14.00R.

Borchardt, John K.; and Young, Bill M., to Halliburton Company. Method of minimizing fines migration in a subterranean formation. 4,497,596, Cl. 405-263.000.

Bortolussi, Gerard, to Societe Anonyme Automobiles Peugeot; and Societe Anonyme Automobile Citroen. Bearing cap for an overhead cam-shaft of an internal combustion engine. 4,497,289, Cl. 123-90.270.

Boschetti, Enrica. Vaginal device for contraceptive control. 4,497,317, Cl. 128-127.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Process for joining together two or more metal parts using a homogeneous low melting point copper based alloys. 4,497,429, Cl. 228-263.180.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Brazing method using homogeneous low melting point copper based alloys. 4,497,430, Cl. 228-263.180.

Boser, Ronald J., to Yoshida Kogyo K.K. Method and apparatus for sewing elongated fabric piece. 4,497,270, Cl. 112-265.200.

Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., to GTE Products Corporation. Method of making a photoflash article using injection molding. 4,497,756, Cl. 264-1.900.

Boucher, Donald A.; and Boucher, Gilbert D., to USM Corporation. Pull through blind rivet. 4,497,603, Cl. 411-34.000.

Boucher, Gilbert D.: *See*—
Boucher, Donald A.; and Boucher, Gilbert D., 4,497,603, Cl. 411-34.000.

Bourget, Jean-Claude, to Les Cables de Lyon. Apparatus for sequentially annealing and then hardening long metal components made of fine or special steel. 4,497,474, Cl. 266-81.000.

Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, to Freres, Roquette. Sugarless hard candy. 4,497,846, Cl. 426-660.000.

Bousquet, Jacques; and Guguen, Claude, to Elf France. Hydrotreatment for petroleum cuts with offretite. 4,497,703, Cl. 208-111.000.

Bowen, James H., to International Telephone and Telegraph Corporation. TDM Communication system. 4,498,167, Cl. 370-44.000.

Boyer, John. Heat exchanger. 4,497,365, Cl. 165-164.000.

BP Chimie Societe Anonyme: *See*—
Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., 4,497,904, Cl. 502-104.000.

Brabson, Joseph B.: *See*—
Cioca, Gheorge; Feeley, George F.; Brabson, Joseph B.; and Barth, Peter, 4,497,862, Cl. 428-220.000.

Brace, Alan L.: *See*—
Allen, Karl D.; and Brace, Alan L., 4,497,494, Cl. 277-27.000.

Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., to General Motors Corporation. Process for growing graphite fibers. 4,497,788, Cl. 423-447.300.

Brady, Harold E., Jr., to Minnesota Mining and Manufacturing Company. Imageable prismatic array. 4,497,860, Cl. 428-156.000.

Braintech, Inc.: *See*—
Culver, Norman D., 4,498,080, Cl. 340-728.000.

Brandenburg, Frank J., Jr. Sun tracking solar air heating system. 4,497,311, Cl. 126-425.000.

Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., to Data General Corporation. Data processing system having addressing mechanisms for processing object-based information and a protection scheme for determining access rights to such information. 4,498,131, Cl. 364-200.000.

Bratt, Richard G.: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.

Braunhut, Harold N. Universally fitting, modular ballistic garment. 4,497,069, Cl. 2-2.500.

Breckinridge, James B.; Page, Norman A.; Shack, Roland V.; and Shannon, Robert R., to United States of America, National Aeronautics and Space Administration. Optical system. 4,497,540, Cl. 350-168.000.

Breedis, John F.; and Fister, Julius C., to Olin Corporation. Copper alloys for suppressing growth of Cu-Al intermetallic compounds. 4,498,121, Cl. 361-401.000.

Brems, John H. Rotary retardation devices. 4,497,393, Cl. 188-322.500.

Breslau, Steven M., to Sima Products Corporation. Photographic slide sorter. 4,497,127, Cl. 40-367.000.

Breslin, Michael K. Apparatus and method for recovery of liquid hydrocarbons from ground water. 4,497,370, Cl. 166-372.000.

Bretherick, Leslie; and Hodgson, Philip K. G., to British Petroleum Company p.l.c., The. Compositions for use in oil recovery and method of use. 4,497,717, Cl. 252-8.55D.

Brettbacher, Franz: *See*—
Langer, Uwe; and Brettbacher, Franz, 4,497,191, Cl. 72-202.000.

Brewington, Grace T.: *See*—
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.

Brieger, Emmet F., to Geo Vann, Inc. Packer actuated vent assembly. 4,497,366, Cl. 166-150.000.

Bright, Stephen A.: *See*—
Brun, Philip L.; and Bright, Stephen A., 4,497,624, Cl. 425-548.000.

Brisset, Guy C. S.; and Mas, Michel C. Organosoluble salts of manganese, process of preparation of same. 4,497,743, Cl. 260-429.00R.

British Petroleum Company Limited, The: *See*—
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.

British Petroleum Company p.l.c., The: *See*—
Ball, William J.; and Stewart, David G., 4,497,969, Cl. 585-415.000.
Bretherick, Leslie; and Hodgson, Philip K. G., 4,497,717, Cl. 252-8.55D.
Young, Dennis, 4,497,970, Cl. 585-417.000.

Brockway-Imco Inc.: *See*—
Beuscher, Joseph J., 4,497,623, Cl. 425-525.000.
Grebowiec, Thaddeus J., 4,497,622, Cl. 425-525.000.

Brogardh, Torgny: *See*—
Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,498,004, Cl. 250-227.000.

Brokaw, A. Ray: *See*—
Georgens, Harold H.; and Brokaw, A. Ray, 4,498,112, Cl. 360-96.500.

Brookstein, David S.: *See*—
Petterson, De Witt R.; Skelton, John; and Brookstein, David S., 4,497,866, Cl. 428-365.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Lucke, Hans-Hermann; and Jessen, Jens-Christian, 4,497,879, Cl. 429-62.000.

Brown, James T., Jr.; and Schowengerdt, Frank D., to Colorado School of Mines. Apparatus and method for dust control by condensation enlargement. 4,497,641, Cl. 55-94.000.

Brown, James W.; Chen, Tsang J.; and Schen, Michael A., to Eastman Kodak Company. Latex compositions comprising loadable polymeric particles. 4,497,929, Cl. 524-547.000.

Brown, Peter K. Handlebar switch. 4,497,988, Cl. 200-61.850.

Brown, Wade R.; and Wasserstrom, Henry, to Coca-Cola Company, The. Disconnect arrangement for beverage dispenser valves. 4,497,343, Cl. 137-614.060.

Brown & Williamson Tobacco Corporation: *See*—
Sullivan, James W.; and Lewis, Robert T., 4,497,276, Cl. 118-694.000.

Brownline Pipe Inc.: *See*—
Galloway, Cecil, 4,497,440, Cl. 239-201.000.

Bruhmann, Werner, to Robert Bosch GmbH. Minimum-maximum speed governor for fuel-injected engines. 4,497,295, Cl. 123-374.000.

Brule, James E.; O'Neill, James K.; and Palmer, David N., to Combustion Engineering, Inc. Electrode material. 4,497,726, Cl. 252-182.100.

Brun, Philip L.; and Bright, Stephen A., to Electra Form, Inc. Injection molding machine. 4,497,624, Cl. 425-548.000.

BS&B Engineering Company Inc.: *See*—
Markus, Gerardus A., 4,497,281, Cl. 122-248.000.

Bucher, Anton, to Swiss Aluminium Ltd. Flat pallet. 4,497,260, Cl. 108-56.100.

Buck, James R. Expanding-contracting gripping device for workpiece. 4,497,498, Cl. 279-2.00R.

Budd Company, The: *See*—
Sherrow, Lionel, 4,497,512, Cl. 292-92.000.

Buderus Aktiengesellschaft: *See*—
Schreiber, Jurgen, 4,497,138, Cl. 51-3.000.

Buehrle, Thomas M.: *See*—
Landsness, Clifford A.; and Buehrle, Thomas M., 4,498,042, Cl. 324-54.000.

Bukkems, Franciscus H. J.; and Quist, Bernardus B., to Shell Oil Company. Centrifugal pump for transferring solid particles from a low pressure zone into a high pressure zone. 4,497,605, Cl. 414-218.000.

Buljan, Sergej-Tomislav: *See*—
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,497,228, Cl. 82-1.00C.

Bunting, Richard M.; and Acampora, Alfonse, to RCA Corporation. Apparatus for frame-to-frame comb filtering composite TV signal. 4,498,100, Cl. 358-31.000.

Buonamici, Metilde: *See*—
Merlini, Lucio; Rossi, Alessandro; and Buonamici, Metilde, 4,497,820, Cl. 514-432.000.

Burger, Arnulf: *See*—
Hecke, Paul; Burger, Arnulf; and Werther, Heinz-Ulrich, 4,497,081, Cl. 15-102.000.

Burkhardt, Charles E.: *See*—
Lin, Kou C.; and Burkhardt, Charles E., 4,497,449, Cl. 242-4.00R.

Burkstrand, James M.: *See*—
Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., 4,497,788, Cl. 423-447.300.

Buropatent AG: *See*—
Schmidt, Siegfried, 4,497,254, Cl. 104-1.00R.

Burris Company: *See*—
Burris, Donald J., 4,497,548, Cl. 350-560.000.

Burris, Donald J., to Burris Company. Variable-power riflescope with range-compensating reticle and a field stop diaphram centered off the optical axis. 4,497,548, Cl. 350-560.000.

Burroughs Corp.: *See*—
Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., 4,498,133, Cl. 364-200.000.

Bussiere, Guy: *See*—
Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, 4,497,846, Cl. 426-660.000.

Butcher, Henry P. Dispenser for internally self-supported rolled material. 4,497,453, Cl. 242-55.530.

Buzard, Paul F.; and Harrington, Robert J., to Westinghouse Electric Corp. Binary signal decoding apparatus and method. 4,498,198, Cl. 375-91.000.

Byrd, Brian K. Breathing and relaxation programs to aid childbirth. 4,497,312, Cl. 128-1.00R.

Byrum, Barney L. Motion and orientation sensor. 4,497,118, Cl. 33-366.000.

C. R. Bard, Inc.: *See—*
Allen, Douglas, Jr.; and Flam, Eric, 4,497,914, Cl. 523-105.000.

C. Van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,497,446, Cl. 239-661.000.

Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, to Societe Nationale Elf Aquitaine (Production). Connection-disconnection device between one rigid pipe, inside well-tubing connected to a base by an articulated coupling, and another rigid pipe fixed to this base. 4,497,510, Cl. 285-18.000.

Caffrey, Walter T.: *See—*
Nielsen, Edward M., Jr.; and Caffrey, Walter T., 4,497,083, Cl. 15-250.060.

Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., to United States of America, Energy. Apparatus and method for quantitatively evaluating total fissile and total fertile nuclide content in samples. 4,497,768, Cl. 376-153.000.

Calenda, Ciro; De Filippis, Pietro; and Salvatore, Amedeo, to Texas Instruments Incorporated. Electric switches actuated by bimetals for one or several temperatures of response. 4,498,069, Cl. 337-354.000.

Cameron, John K., to Raychem Corporation. Supplementary force heat-recoverable connecting device. 4,497,527, Cl. 339-30.000.

Camilo Muebles, Inc.: *See—*
Lopez, Jose A., 4,497,148, Cl. 52-126.300.

Campbell, Dennis R., to Boeing Company, The. Snubbing apparatus for an aircraft control surface actuator. 4,497,461, Cl. 244-75.00R.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Fothergill, Noel O., 4,498,052, Cl. 330-149.000.

Cannon, David W.: *See—*
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., 4,497,208, Cl. 73-584.000.

Canon Kabushiki Kaisha: *See—*
Fujimoto, Ryo, 4,498,097, Cl. 358-12.000.
Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, 4,497,568, Cl. 355-14.00R.
Suzuki, Kenji, 4,497,561, Cl. 354-406.000.
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, 4,497,573, Cl. 355-58.000.
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.

Carl-Zeiss-Stiftung: *See—*
Szenger, Franz, 4,497,522, Cl. 308-6.00C.

Carlisle Laboratories, Inc.: *See—*
Milia, Frank, 4,497,432, Cl. 229-17.00B.

Carlson, Chesley F.: *See—*
Hull, Frank A., 4,498,140, Cl. 364-571.000.

Carlson, Lee A.: *See—*
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., 4,497,275, Cl. 118-268.000.

Carreno, Diether E., to General Electric Company. Tapered core exit for gas turbine bucket. 4,497,613, Cl. 416-228.000.

Carrier Corporation: *See—*
Richardson, Patrick L., 4,498,077, Cl. 340-648.000.

Carrington, Donald P.; and MacKay, Andrew D., to Combustion Engineering, Inc. Rotary knife control. 4,497,229, Cl. 83-76.000.

Carroll, Allen M.: *See—*
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.

Carter, William M.; and Rodgers, John M. Powered cart mounted cable puller. 4,497,470, Cl. 254-134.3FT.

Casals-Stenzel, Jorge: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Cason, William C.: *See—*
Advani, Hira; and Cason, William C., 4,498,142, Cl. 364-900.000.

Caterpillar Tractor Co.: *See—*
Earleson, Walter E.; King, Dennis M.; and Moncelle, Michael E., 4,498,016, Cl. 290-40.00R.

Cates, Michael R.: *See—*
Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., 4,497,768, Cl. 376-153.000.

Catros, Jean Y.: *See—*
Richard, Christian; and Catros, Jean Y., 4,498,102, Cl. 358-133.000.

Caudel, Edward R., to Texas Instruments Incorporated. Microcomputer with accumulator addressing. 4,498,135, Cl. 364-200.000.

Cause Consequence Analysis, Inc.: *See—*
Williams, Leslie P., 4,497,442, Cl. 239-437.000.

Caussignac, Jean-Marie; and Leroy, Maurice, to L'Etat Francais. Article analyzer apparatus by silhouette projection. 4,497,576, Cl. 356-335.000.

Cavalli, Alfredo. Percolator assembly supporting structure, particularly for domestic automatic coffee percolators. 4,497,243, Cl. 99-323.000.

Cegedur Societe de Transformation de l'Aluminiu, Pechiney: *See—*
Bercovici, Serge, 4,497,360, Cl. 164-454.000.

Celler, George K.; and Robinson, McDonald, to AT&T Bell Laboratories. Process for producing dielectrically isolated silicon devices. 4,497,683, Cl. 156-603.000.

Celtite, Inc.: *See—*
Rausch, Paul G., 4,497,403, Cl. 206-219.000.

Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Ramelot, Daniel L., 4,497,214, Cl. 73-863.120.

Chaki, Takao, to Clarion Co., Ltd. Pushbutton tuner with staggered tuning coils. 4,498,064, Cl. 334-7.000.

Chang, Irving B.; and Beckwith, Robert E., Jr., to Allied Corporation. Sulfur stabilized oxidized polyolefin and asphalt composition. 4,497,921, Cl. 524-59.000.

Charboneau, Ben J.: *See—*
Zulauf, Gary B.; and Charboneau, Ben J., 4,497,205, Cl. 73-313.000.

Charney, John G.: *See—*
Pickett, Charles G.; Charney, John G.; and Khasin, Marra, 4,497,706, Cl. 210-130.000.

Chase, Arthur P., to CRS Group, Inc. Tunnel lining. 4,497,590, Cl. 405-152.000.

Chauvin, Yves: *See—*
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.

Cheadle, Brian E.; and Lee, Gordon J. Layered solid corrosion inhibitors for use in corrodible devices for automatic addition to coolant systems. 4,497,364, Cl. 165-134.00R.

Chemie Linz Aktiengesellschaft: *See—*
Schneider, Heinrich; and Hammerschmidt, Johann, 4,497,097, Cl. 28-112.000.

Chemie Und Filter GmbH, Verfahrenstechnik KG: *See—*
Berger, Hermann, 4,498,019, Cl. 307-132.00E.

Chemische Werke Huls AG: *See—*
Reese, Dirk; and Rigler, Josef K., 4,497,912, Cl. 521-59.000.
Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, 4,497,911, Cl. 521-56.000.

Chen, Tsang J.: *See—*
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,497,929, Cl. 524-547.000.

Chenausky, Peter P.: *See—*
Wayne, Robert J.; Laughman, Lanny M.; Mongeon, Robert J.; and Chenausky, Peter P., 4,498,179, Cl. 372-27.000.

Cherukuri, S. Rao; Bilka, Kenneth P.; and Hriscisce, Frank, to Warner-Lambert Company. Chewing gum composition having enhanced flavor-sweetness. 4,497,832, Cl. 426-5.000.

Chervenak, Paul R., to Granning Suspensions, Inc. Vehicle axle suspension. 4,497,507, Cl. 280-704.000.

Chestnut, Billy D. Fisherman's accessory. 4,497,129, Cl. 43-21.200.

Chevron Research Company: *See—*
Blanton, William A., 4,497,598, Cl. 406-114.000.
Loh, William, 4,497,649, Cl. 71-88.000.

Chiba, Akio: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Chiba, Akio; and Shimizu, Seiki, 4,497,875, Cl. 428-620.000.

Chiba, Shinsaku: *See—*
Yano, Ryuji; Chiba, Shinsaku; Yoshida, Kazutoshi; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,498,153, Cl. 365-10.000.

Chicago Pneumatic Tool Company: *See—*
Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., 4,497,197, Cl. 72-453.170.

Chikashige, Kiyoshi: *See—*
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, 4,497,550, Cl. 350-584.000.

Chisholm, Donald M.; Newton, Colin; and Winchester, Stanley W., to Fleet, Douglas Ross, a part interest. Moulded product. 4,497,662, Cl. 106-92.000.

Chlumecky, Nicholas, to Commercial Shearing, Inc. Cribbing. 4,497,597, Cl. 405-288.000.

Cho, Soo S., to Macho Products, Inc. Unitary leg and foot protective device. 4,497,070, Cl. 2-22.000.

Choinski, Edward J., to Polaroid Corporation. Process simulator. 4,497,121, Cl. 34-23.000.

Chomerics, Inc.: *See—*
Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., 4,497,533, Cl. 339-143.00R.

Chong, Wun C. Seam inspection apparatus. 4,497,409, Cl. 209-538.000.

Chou, Der-Jeou: *See—*
Heath, Donald L.; and Chou, Der-Jeou, 4,497,973, Cl. 136-212.000.

Chow, Ho, to Melnor Industries, Inc. Pulsating sprinkler. 4,497,441, Cl. 239-230.000.

Chown, David P. M., to International Standard Electric Corporation. Optical receiver. 4,498,197, Cl. 455-619.000.

Christiansen, Paul J., to General Motors Corporation. Unitized wheel bearing seal with multiple lips. 4,497,495, Cl. 277-50.000.

Christie, George A.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,497,818, Cl. 514-397.000.

Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., to Mobil Oil Corporation. Deagglomeration of porous siliceous crystalline materials. 4,497,786, Cl. 423-329.000.

Chukran, Rudolph E.: *See—*
Gaudet, James L.; and Chukran, Rudolph E., 4,498,150, Cl. 364-900.000.

Ciba-Geigy Corporation: *See—*
Drabek, Jozef; and Boger, Manfred, 4,497,746, Cl. 260-544.00C.
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,497,741, Cl. 260-245.770.
Martin, Henry, 4,497,745, Cl. 260-465.00D.
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.
Ostermayer, Franz; and Zimmermann, Markus, 4,497,813, Cl. 514-166.000.
Spivack, John D.; and Pastor, Stephen D., 4,497,959, Cl. 549-253.000.
Szczepanski, Henry, 4,497,648, Cl. 71-88.000.
Zimmermann, Markus; and Kuhnis, Hans, 4,497,808, Cl. 514-222.000.

Cibis, Johannes, to Krones A.G. Hermann Kronseder Maschinenfabrik. Device for testing the rims of bottle apertures for flaws. 4,498,003, Cl. 250-223.00B.

Cioca, Gheorge; Feeley, George F.; Brabson, Joseph B.; and Barth, Peter, to Seton Company. Moisture vapor permeable sheet materials. 4,497,862, Cl. 428-220.000.

City of Hope National Medical Center: *See—*
Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., 4,497,791, Cl. 424-1.100.

Clancy, Gerald F.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Clapper, David D.; and Talmadge, Thomas E. Drips-catching mats for garage floors and the like. 4,497,147, Cl. 52-105.000.

Clarion Co., Ltd.: *See—*
Chaki, Takao, 4,498,064, Cl. 334-7.000.

Clark, Richard E., to Continental Group, Inc., The. Method of forming bottle neck finish for accepting a snap-in closure. 4,497,758, Cl. 264-23.000.

Clarke, Donald L.: *See—*
Spencer, Robert E.; and Clarke, Donald L., 4,497,771, Cl. 420-440.000.

Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Apparatus and method for cleaning a video player/recorder. 4,498,113, Cl. 360-128.000.

Clausen, Peter J. M.: *See—*
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,497,625, Cl. 431-208.000.

Clemson University: *See—*
Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., 4,497,265, Cl. 111-86.000.

Cline, Martin J.: *See—*
Salser, Winston A.; Cline, Martin J.; and Stang, Howard D., 4,497,796, Cl. 424-95.000.

Clitherow, John W., to Glaxo Group Limited. Process for the preparation of ranitidine. 4,497,961, Cl. 549-495.000.

Coate, William C., to Lodge & Shipley Company, The. Automatic tool changer for a lathe. 4,497,410, Cl. 211-1.500.

Coca-Cola Company, The: *See—*
Brown, Wade R.; and Wasserstrom, Henry, 4,497,343, Cl. 137-614.060.
Iwans, Robert C., 4,497,179, Cl. 62-59.000.
Sedam, Jason K., 4,497,348, Cl. 141-2.000.

Cogan, Adrian I., to GTE Laboratories Incorporated. Method of making self-aligned high-frequency static induction transistor. 4,497,107, Cl. 29-571.000.

Cogan, Jerry A., Jr., to Milliken Research Corporation. Laminated weft insertion fabric. 4,497,863, Cl. 428-253.000.

Coleco Industries, Inc.: *See—*
Mercurio, Frank, 4,497,500, Cl. 280-1.130.

Colgate-Palmolive Company: *See—*
Bauman, Robert A., 4,497,715, Cl. 252-8.800.

Colorado School of Mines: *See—*
Brown, James T., Jr.; and Schowengerdt, Frank D., 4,497,641, Cl. 55-94.000.

Combet, Michel: *See—*
Beney, Gilbert; and Combet, Michel, 4,497,378, Cl. 173-32.000.

Combustion Engineering, Inc.: *See—*
Brule, James E.; O'Neill, James K.; and Palmer, David N., 4,497,726, Cl. 252-182.100.
Carrington, Donald P.; and MacKay, Andrew D., 4,497,229, Cl. 83-76.000.
Gaines, Albert L., 4,497,767, Cl. 376-142.000.
Hurta, Gary L.; Milberger, Lionel J.; and Williams, Alford M., 4,497,369, Cl. 166-368.000.

Commercial Modular Systems, Inc.: *See—*
Ferris, Richard A.; Hess, Roger M.; and Garman, James R., 4,497,261, Cl. 109-2.000.

Commercial Shearing, Inc.: *See—*
Chlumecky Nicholas, 4,497,597, Cl. 405-288.000.

Commereuc, Dominique: *See—*
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.

Commissariat a l'Energie Atomique: *See—*
Fournie, Francois J. C.; and Deleuze, Christian J. A., 4,497,640, Cl. 55-16.000.

Compagnie Francaise de Petroles: *See—*
Fournie, Francois J. C.; and Deleuze, Christian J. A., 4,497,640, Cl. 55-16.000.

Compagnie Francaise De Produits Industriels: *See—*
Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, 4,497,666, Cl. 148-6.15R.

Composite Container Corporation: *See—*
Bonis, Laszlo J., 4,497,857, Cl. 428-35.000.

Coney, Michael H.: *See—*
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Contemporary Inc.: *See—*
Kanzelberger, James C.; and Deau, William J., 4,497,248, Cl. 104-27.000.

Continental Group, Inc., The: *See—*
Clark, Richard E., 4,497,758, Cl. 264-23.000.

Conver Ing. - Technik GmbH & Co., KG: *See—*
Gloystein, Jurgen, 4,497,271, Cl. 114-75.000.

Cook, Charles F.: *See—*
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., 4,497,971, Cl. 585-658.000.

Cooke, Bernard; and Wrobel, Peter, to Loctite (Ireland) Limited. Adhesive composition adapted for setting at a time later than the time of application. 4,497,916, Cl. 523-176.000.

Coomber, Barry A.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.

Cooper, J. Carl, to Ampex Corporation. High speed correlation circuit and method. 4,498,141, Cl. 364-728.000.

Cooperberg, Bruce; and Peck, Gene E., to Insta-Print, Inc. Diffusion-transfer processor for photomechanical reproductions. 4,497,558, Cl. 354-303.000.

Cooperman, Gene D.: *See—*
Winful, Herbert G.; and Cooperman, Gene D., 4,497,535, Cl. 350-96.120.

Copeland Corporation: *See—*
Griffith, Russell W., 4,497,615, Cl. 417-310.000.

Cornely, Wolfgang: *See—*
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,497,595, Cl. 405-261.000.

Corrigan, Charles E.; and Dodge, Paul R., to Garrett Corporation, The. Combustion turbine engine. 4,497,171, Cl. 60-39.750.

Courter, Harry I.; and Perry, Leroy A., to Emhart Industries, Inc. Line and program switch assembly for a timing mechanism. 4,497,985, Cl. 200-38.00R.

Cowling, Albert R., to Geotech Development Corporation. Absorbent pillow. 4,497,712, Cl. 210-691.000.

Crane Packing Limited: *See—*
Sall, Surinderpal S.; and Kemp, John, 4,497,493, Cl. 277-2.000.

Crapser, James R., to S. C. Johnson & Son, Inc. Vapor-dispensing paper roll holder. 4,497,456, Cl. 242-55.550.

Crawshaw, Delbert D., to RCA Corporation. Field-transfer CCD imagers with reference-black-level generation capability. 4,498,105, Cl. 358-213.000.

Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, to Societe Cortial, S.A. 2-Amino-5-aminomethyl-2-oxazolines, compositions and use. 4,497,812, Cl. 514-211.000.

Crevecoeur, Cornelis: *See—*
de Wit, Hendrik J.; Van Berlo, Albertus W. M.; and Crevecoeur, Cornelis, 4,497,699, Cl. 204-129.200.

Crippen, Henry O. Chance device. 4,497,487, Cl. 273-146.000.

Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., to Amax Inc. Production of metals with low selenium contents. 4,497,659, Cl. 75-109.000.

Cronin, Michael J., to Lockheed Corporation. Electronic circuit board and method and apparatus for thermal management thereof. 4,498,119, Cl. 361-386.000.

Crouzet, Pierre: *See—*
Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., 4,497,904, Cl. 502-104.000.

CRS Group, Inc.: *See—*
Chase, Arthur P., 4,497,590, Cl. 405-152.000.

Crus, Richard A.: *See—*
Baker, Jerry W.; Crus, Richard A.; and Haderle, Donald J., 4,498,145, Cl. 364-900.000.

Cullingford, Hatice S.: *See—*
McMullen, John W.; Wheeler, Michael G.; Cullingford, Hatice S.; and Sherman, Robert H., 4,497,775, Cl. 422-159.000.

Culver, Norman D., to Braintech, Inc. Apparatus and method for topographic display of multichannel data. 4,498,080, Cl. 340-728.000.

Cummins, Joseph M., to Texas A&M University System, The. Method of regulating appetite and efficiency of food utilization employing interferon. 4,497,795, Cl. 424-85.000.

Cummins, Pamela R. Clothes hanger having shroud to maintain garments in rolled condition. 4,497,423, Cl. 223-96.000.

Curry, Hugh R. Muzzle ejecting sabot cartridge firearm system. 4,497,239, Cl. 89-198.000.

Curry, Paul V. L. Heart pacing lead. 4,497,326, Cl. 128-785.000.

Curt G. Joa, Inc.: *See—*
Joa, Curt G.; and Radzins, Edmund, 4,497,448, Cl. 241-186.400.

Custom Automation Designs, Inc.: *See—*
Hexamer, Donald L.; Spence, Randy D.; and Hesselberg, Johnny, 4,498,047, Cl. 324-158.00F.

D. M. & E. Corporation: *See—*
Durrett, Van D., 4,497,231, Cl. 83-663.000.

Daimler-Benz Aktiengesellschaft: *See—*
Gmeiner, Gunter; Moller, Hermann; Andres, Rudolf; and Faust, Eberhard, 4,497,517, Cl. 297-231.000.

Daimon, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Track deviation detecting apparatus. 4,498,159, Cl. 369-44.000.

Dainippon Pharmaceutical Co., Ltd.: *See*—
Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, 4,497,816, Cl. 514-300.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Sakamoto, Takashi, 4,498,109, Cl. 358-296.000.

Dairy Technology Ltd.: *See*—
Marquardt, Robert F.; Pederson, Harold T., Jr.; and Francis, Leo H., 4,497,836, Cl. 426-239.000.

Daiwa Can Company, Limited: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.

Dale Electronics, Inc.: *See*—
Plough, Charles T., Jr.; and Hight, Ralph D., 4,498,071, Cl. 338-308.000.

Danfoss A/S: *See*—
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,497,625, Cl. 431-208.000.

Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Method for making double L-shaped electrode. 4,497,112, Cl. 29-825.000.

Daniel, Neville H.; and Duncan, Hugh M., to Austin Rover Group Limited. Control system for air/fuel ratio adjustment system. 4,497,297, Cl. 123-440.000.

Dasovich, Barney A. Reversible high-hat cymbal stand. 4,497,238, Cl. 84-421.000.

Data Electronics, Inc.: *See*—
Georgens, Harold H.; and Brokaw, A. Ray, 4,498,112, Cl. 360-96.500.

Data General Corporation: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Dataproducts Corporation: *See*—
Jezbera, Val K., 4,497,110, Cl. 29-602.00R.

Datta, Amitava: *See*—
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,497,429, Cl. 228-263.180.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,497,430, Cl. 228-263.180.

Dauptain, Jean-Loup: *See*—
Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, 4,497,666, Cl. 148-6.15R.

Davidson, Arthur: *See*—
Faris, Sadeg M.; Moskowitz, Paul A.; Davidson, Arthur; and Sai-Halasz, George A., 4,498,046, Cl. 324-158.00F.

Davidson, Theodore: *See*—
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.

Davis, Alan R., to Eaton Corporation. Variable mechanical advantage shift lever. 4,497,396, Cl. 192-53.00E.

Davis, C. Paul, to PerfectData Corporation. Non-abrasive magnetic head cleaning system. 4,498,114, Cl. 360-128.000.

Davy McKee (Sheffield) Limited: *See*—
Gronbech, Robert W.; and Lister, Michael, 4,497,215, Cl. 74-89.150.

Dean, Barry D., to Atlantic Richfield Company. Moldable polyblend containing poly(arylene sulfide). 4,497,928, Cl. 524-502.000.

Dearman, Timothy C. Welder's mismatch gauge. 4,497,115, Cl. 33-174.00R.

Dearman, Timothy C. Pipefitter's protractor. 4,497,119, Cl. 33-464.000.

Deau, William J.: *See*—
Kanzelberger, James C.; and Deau, William J., 4,497,248, Cl. 104-27.000.

Debono, Manuel, to Eli Lilly and Company. N-Acyl glycopeptide derivatives. 4,497,802, Cl. 514-8.000.

DeBortoli, George, to Northern Telecom Limited. Distributing frame for telecommunications systems. 4,497,411, Cl. 211-26.000.

Decavele, Dominique; and Fournier, Jean-Pierre, to Transac-Alcatel. Security method and device for communicating confidential data via an intermediate stage. 4,498,000, Cl. 235-380.000.

Deckman, Harry W.; Witzke, Horst; and Wronski, Christopher, to Exxon Research & Engineering Co. Realization of a thin film solar cell with a detached reflector. 4,497,974, Cl. 136-259.000.

DeCristofaro, Nicholas J.: *See*—
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,497,429, Cl. 228-263.180.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,497,430, Cl. 228-263.180.

De Filippis, Pietro: *See*—
Calenda, Ciro; De Filippis, Pietro; and Salvatore, Amedeo, 4,498,069, Cl. 337-354.000.

Deguchi, Naoyasu; Kameyama, Koji; and Nakamura, Taku, to Fuji Photo Film Co., Ltd. Silver halide color reversal photographic material. 4,497,893, Cl. 430-359.000.

Dehouwer, Louis J.: *See*—
Govaerts, Karel J.; and Dehouwer, Louis J., 4,498,030, Cl. 315-60.000.

Dejean, Rodrigue. Greeting card with illuminated message and design. 4,497,126, Cl. 40-124.100.

Deleuze, Christian J. A.: *See*—
Fournie, Francois J. C.; and Deleuze, Christian J. A., 4,497,640, Cl. 55-16.000.

Delonghi, Adriano G. A., to Fabrication De Maquinas, S.A. Non-refillable and inviolable bottle-cap. 4,497,415, Cl. 215-21.000.

Demartini, Robert J. Hangers for rain gutter devices. 4,497,146, Cl. 52-12.000.

de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of polysiloxane/polyoxyalkylene copolymer useful as stabilizers in making polyurethane foams. 4,497,962, Cl. 556-446.000.

Dempsey, Edmond N., to Peerless Machine & Tool Corporation. Small press for forming sheet material. 4,497,620, Cl. 425-145.000.

Dench, Godfrey R. M., to BICC Public Limited Company. Electric and/or optical cable. 4,497,537, Cl. 350-96.230.

Dennison Manufacturing Company: *See*—
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., 4,497,275, Cl. 118-268.000.

Dermik Laboratories, Inc.: *See*—
Klein, Robert W.; and Foxx, Mary E., 4,497,794, Cl. 424-81.000.

Derr, Carl B.: *See*—
Pickett, Kenneth J.; and Derr, Carl B., 4,497,264, Cl. 111-73.000.

de Saint-Palais, Jacques: *See*—
Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, 4,497,510, Cl. 285-18.000.

Deschepper, Pierre: *See*—
Robyn, Pierre; and Deschepper, Pierre, 4,497,473, Cl. 266-44.000.

DeSoto, Inc.: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,497,946, Cl. 528-99.000.

Deutsch, Warren D. Lacrosse glove. 4,497,073, Cl. 2-161.00A.

Deutsche Gesellschaft fur Wiederaufarbeitung: *See*—
Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, 4,498,011, Cl. 250-507.100.

Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See*—
Blaseck, Klaus, 4,497,776, Cl. 422-159.000.

Devos, Francis: *See*—
Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, 4,497,846, Cl. 426-660.000.

de Vroom, Hubertus M., to Nordipa AG. Method for the fabrication of transferable enamel sheet. 4,497,851, Cl. 427-147.000.

DeWald, Carl O.; and Pollock, Jack H. Plug valve with hydraulically actuated seals. 4,497,467, Cl. 251-78.000.

de Wit, Hendrik J.; Van Berlo, Albertus W. M.; and Crevecoeur, Cornelis, to U.S. Philips Corporation. Method of treating foil for electrolytic capacitors. 4,497,699, Cl. 204-129.200.

Dexter, Edwin, to Gaulin Corporation. Pulsation dampener and acoustic attenuator. 4,497,388, Cl. 181-233.000.

Diaz, Zaida, to Shell Oil Company. Solution removal of HCN from gaseous streams, with hydrolysis of thiocyanate formed. 4,497,784, Cl. 423-236.000.

Dickinson, Ben W. O., III; Dickinson, Robert W.; Odgers, Irving L.; and McGhee, James, to Bechtel National, Inc. Earth drilling apparatus and method. 4,497,381, Cl. 175-61.000.

Dickinson, Robert W.: *See*—
Dickinson, Ben W. O., III; Dickinson, Robert W.; Odgers, Irving L.; and McGhee, James, 4,497,381, Cl. 175-61.000.

Diederich, Walter J.: *See*—
Gruner, George P.; and Diederich, Walter J., 4,497,339, Cl. 137-495.000.

Diesel Kiki Co., Ltd.: *See*—
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Digital Equipment Corporation: *See*—
Stell, Douglas E., 4,498,098, Cl. 358-22.000.

Dochi, Kiyotaka: *See*—
Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, 4,498,090, Cl. 346-159.000.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Thubeauville, Heinz, 4,497,691, Cl. 202-228.000.

Dr.-Ing. Rudolf Hell GmbH: *See*—
Lindemann, Eckhard; and Wolfgang, Neumann, 4,498,108, Cl. 358-283.000.

Dodge, Paul R.: *See*—
Corrigan, Charles E.; and Dodge, Paul R., 4,497,171, Cl. 60-39.750.

Doi, Haruo: *See*—
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,497,869, Cl. 428-402.000.

Dolby, Ray M. Circuit arrangements for modifying dynamic range. 4,498,055, Cl. 330-284.000.

Dolby, Ray M. Circuit arrangements for modifying dynamic range using series arranged bi-linear circuits. 4,498,060, Cl. 333-14.000.

Donmichael, T. A. Esophageal obturator airway. 4,497,318, Cl. 128-202.280.

Doorduin, Adrianus W.: *See*—
Schoute, Frederik C.; Doorduin, Adrianus W.; and Hooijmans, Jacobus L. M., 4,497,978, Cl. 179-9.000.

Dotti, Enrico; and Mariani, Beniamino, to Societa'Cavi Pirelli S.p.A. Apparatus for manufacturing an optical fiber cable with optical fibers in grooves in the cable core. 4,497,164, Cl. 57-6.000.

Doty, Allen W.: *See*—
Tilley, George L.; and Doty, Allen W., 4,497,785, Cl. 423-263.000.

Doty, Verle L.: *See*—
Otto, Stanislaus J.; and Doty, Verle L., 4,497,400, Cl. 198-468.000.
Dover Corporation: *See*—
Guertin, Robert W., 4,497,350, Cl. 141-206.000.
Dow Chemical Company, The: *See*—
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,497,112, Cl. 29-825.000.
Malhotra, Sudarshan K., 4,497,652, Cl. 71-94.000.
Marshall, Cary S.; and Troyer, Scott D., 4,497,697, Cl. 204-73.00R
Thomas, Lowell S.; and Paige, William P., 4,497,920, Cl 524-57.000.
Dowdy, Edward J.: *See*—
Nicholson, Nicholas; Dowdy, Edward J.; Holt, David M.; and Stump, Charles J., Jr., 4,497,769, Cl. 376-257.000.
Doyel, John S. Two-motor, battery-operated mixer-pourer. 4,497,580, Cl. 366-190.000.
Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Benzamidosulfenylcarbamoyl halides. 4,497,746, Cl. 260-544.00C.
Dresser Industries, Inc.: *See*—
Kisiel, Stanley C., 4,497,344, Cl. 137-797.000.
Mermelstein, Seymour, 4,497,202, Cl. 73-202.000.
Dressler, Frederick K., to Motter Printing Press Co. Ink Fountain. 4,497,250, Cl. 101-350.000.
Dross, Joachim: *See*—
Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, 4,497,868, Cl. 428-400.000.
DSM Resins, B.V.: *See*—
van der Klooster, Jacob P.; and van Oosterbos, Johannes P. M., 4,497,937, Cl. 525-333.100.
Dual Fuels Associates Corporation: *See*—
Wintrell, Reginald; and Anderson, Vaughn R., 4,497,304, Cl. 123-527.000.
DuBose, Charles R.: *See*—
Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., 4,497,265, Cl. 111-86.000.
Duda, C. Richard, to United Detector Technology. Absolute radiometric detector. 4,498,012, Cl. 250-578.000.
Duff, James M. Axle alignment bushing. 4,497,504, Cl. 280-673.000.
DuHamel, Raymond H.: *See*—
Werner, William L.; and DuHamel, Raymond H., 4,498,084, Cl. 343-792.500.
Duncan, Hugh M.: *See*—
Daniel, Neville H.; and Duncan, Hugh M., 4,497,297, Cl. 123-440.000.
Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,497,185, Cl. 62-468.000.
Dupont, Andre ; and Laurent, Paul. Tile for an entrance mat. 4,497,858, Cl. 428-44.000.
Du Pont de Nemours, E. I., and Company: *See*—
Fuerniss, Stephen J., 4,497,889, Cl. 430-260.000.
Lee, Denny L. Y.; and Hay, Robert D., 4,498,048, Cl. 324-307.000.
Portnoy, Robert C., 4,497,807, Cl. 514-222.000.
Rodriguez, Manuel S., 4,497,790, Cl. 424-1.100.
Rucker, Klaus G., 4,497,251, Cl. 102-202.600.
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Dworsky, Lawrence N., to Motorola, Inc. Apparatus and method for determining surface contour of piezoelectric wafers. 4,498,045, Cl. 324-71.500.
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Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, to Deutsche Gesellschaft fur Wiederaufarbeitung. Device for receiving, moving and radiation-shielding of vessels filled with expended reactor fuel elements. 4,498,011, Cl. 250-507.100.
E. R. Squibb & Sons, Inc.: *See*—
Krapcho, John; and Wade, Peter C., 4,497,953, Cl. 546-99.000.
Earleson, Walter E.; King, Dennis M.; and Moncelle, Michael E., to Caterpillar Tractor Co. Locomotive governor control. 4,498,016, Cl. 290-40.00R.
Earthway Products, Inc.: *See*—
Pickett, Kenneth J.; and Derr, Carl B., 4,497,264, Cl. 111-73.000.
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., to Phillips Petroleum Company. Oxidative dehydrogenation and cracking of paraffins with a promoted cobalt catalyst. 4,497,971, Cl. 585-658.000.
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Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,497,929, Cl. 524-547.000.
Ng, Yee S., 4,497,566, Cl. 355-3.0CH.
Phillips, Bobby M., 4,497,627, Cl. 432-59.000.
Smart, David C., 4,497,553, Cl. 354-135.000.
Upson, Donald A.; and Kestner, Diane E., 4,497,917, Cl. 523-201.000.
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Davis, Alan R., 4,497,396, Cl. 192-53.00E.
Patel, Kiritkumar R., 4,497,398, Cl. 192-88.00B.
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ECD-ANR Energy Conversion Company: *See*—
Heath, Donald L.; and Chou, Der-Jeou, 4,497,973, Cl. 136-212.000.
Eckert, Alton B.: *See*—
Soderberg, John H.· Eckert, Alton B.; and McFiggans, Robert B., 4,498,187, Cl. 375-117.000.
Edwards, Evan A. Photographic still camera. 4,497,556, Cl. 354-212.000.
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Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.
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Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
Ehrlich, Johann, to Patoflex Corporation. Shoe-sole and method for making the same. 4,497,123, Cl. 36-32.00R.
Ehrlich, Joseph R.; and Hess, Hildegard. Beverages obtained from alcoholic treatment of roasted citrus fruit peels. 4,497,842, Cl. 426-592.000.
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, to Novo Industri A/S. Liquid proteinase concentrate and method for preparation. 4,497,897, Cl. 435-188.000.
Eimco-Secoma Societe Anonyme: *See*—
Beney, Gilbert; and Combet, Michel, 4,497,378, Cl. 173-32.000.
Eisemann, Kurt, to U.S. Philips Corporation. Disc player. 4,498,161, Cl. 369-75.200.
Eisenrith, Karl-Heinz: *See*—
Aulich, Hubert; Eisenrith, Karl-Heinz; and Urbach, Hans-Peter, 4,497,675, Cl. 148-191.000.
Electra Form, Inc.: *See*—
Brun, Philip L.; and Bright, Stephen A., 4,497,624, Cl. 425-548.000.
Electric Power Research Institute, Inc.: *See*—
Lin, Kou C.; and Burkhardt, Charles E., 4,497,449, Cl. 242-4.00R.
Electro-Craft Corporation: *See*—
Razavi, Saeid M., 4,498,037, Cl. 318-561.000.
Elf France: *See*—
Bousquet, Jacques; and Guguen, Claude, 4,497,703, Cl. 208-111.000.
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Elliott, Jon S. Twist clip. 4,497,091, Cl. 24-67.900.
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Papalexis, Gregory C.; and Elliott, Richard I., 4,497,233, Cl. 83-873.000.
Ellsworth, Kenneth A.: *See*—
Addie, David L.; and Ellsworth, Kenneth A., 4,498,096, Cl. 357-67.000.
Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, to Von Roll AG. Process for preventing burn-off on a current-conducting electrode for metallurgical furnaces and electrodes. 4,498,185, Cl. 373-93.000.
Elsner, Ernst, to J. M. Voith GmbH. Planetary gear control system with retarder. 4,497,219, Cl. 74-790.000.
Emhart Industries, Inc.: *See*—
Courter, Harry I.; and Perry, Leroy A., 4,497,985, Cl. 200-38.00R.
Voyles, Gerald A.; and Shedigian, Vandos, 4,498,117, Cl. 361-315.000.
Zink, David E.; and Stout, Garry A., 4,497,986, Cl. 200-38.00R.
EMI Limited: *See*—
Taylor, Richard J., 4,497,252, Cl. 102-214.000.
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Szucs, Laszlo ; and Tasnadi, Csaba, 4,497,689, Cl. 202-174.000.
Energy Conservation Associates Incorporated: *See*—
Nelson, Jon N., 4,497,137, Cl. 49-496.000.
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Hatfield, William R.; Heck, Ronald M.; and Hsiung, Thomas H., 4,497,657, Cl. 75-83.000.
English Electric Valve Company Limited: *See*—
Menown, Hugh; Newton, Barry P.; and Neale, Christopher V., 4,498,181, Cl. 372-38.000.

English, George J.: *See*—
Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., 4,497,756, Cl. 264-1.900.

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Auzolat, Jean, 4,497,084, Cl. 15-250.340.

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Kedem, Tuval, 4,497,501, Cl. 280-43.120.

Errass, Werner; and Waldmeier, Eduard, to Societe d'Assistance Technique pour Produits Nestle S.A. Stable liquid oil-in-water emulsion and process. 4,497,843, Cl. 426-602.000.

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Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.

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ESA, Inc.: *See*—
Matson, Wayne R., 4,497,199, Cl. 73-61.10C.

Esposito, Anthony. Multiplexer and demultiplexer circuits for analog signals. 4,498,166, Cl. 370-9.000.

Esser, Alexander, to Esser-Werke GmbH Vorm. Westmontan-Werke. Method of manufacturing double-walled tube. 4,497,673, Cl. 148-127.000.

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Esser, Alexander, 4,497,673, Cl. 148-127.000.

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Etchells, Robert D.: *See*—
Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., 4,498,134, Cl. 364-200.000.

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Evans, Donald J., deceased: *See*—
Levings, Nelson, Jr.; Evans, Donald J., deceased; and Evans, Stephen G., administrator, 4,497,524, Cl. 312-265.000.

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Ewan, George B.: *See*—
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Excel Industries, Inc.: *See*—
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Exo Sensors, Inc.: *See*—
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Aliani, Giorgio; Lechat, Jacques B.; and Smits, Jozef A. F., 4,497,941, Cl. 526-331.000.
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Halluin, Albert P.; and Barnett, Allan E., 4,497,907, Cl. 502-235.000.
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Rey, S. Frank, 4,497,764, Cl. 264-261.000.
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Weinberg, Harold N.; Rebick, Charles; and McElrath, Kenneth O., 4,497,705, Cl. 208-127.000.
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Baumann, Wolfgang, 4,497,428, Cl. 228-175.000.

Fabian, Wolfgang: *See*—
Laemmermann, Fritz; Rindfleisch, Werner; Fabian, Wolfgang; and Polster, Rudolf, 4,497,120, Cl. 34-15.000.

Fabrication De Maquinas, S.A.: *See*—
Delonghi, Adriano G. A., 4,497,415, Cl. 215-21.000.

Fairchild Camera and Instrument Corp.: *See*—
West, Burnell G., 4,497,998, Cl. 219-210.000.

Farber, David A.: *See*—
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Faris, Sadeg M.; Moskowitz, Paul A.; Davidson, Arthur; and Sai-Halasz, George A., to International Business Machines Corporation. Room temperature cryogenic test interface. 4,498,046, Cl. 324-158.00F.

Farley, Donald V., to Loma Linda University Medical Center. Solution dispenser. 4,497,349, Cl. 141-19.000.

Farmitalia Carlo Erba S.p.A.: *See*—
Merlini, Lucio; Rossi, Alessandro; and Buonamici, Metilde, 4,497,820, Cl. 514-432.000.

Farquhar, Robert L., to Graviner Limited. Fire and explosion detection and suppression. 4,497,373, Cl. 169-45.000.

Fast, Jacob. Support hook and assembly for merchandising display. 4,497,464, Cl. 248-220.300.

Faust, Eberhard: *See*—
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Fawzi, Mahdi B., to Mallinckrodt, Inc. Gentisic acid salts as radiographic scanning agent stabilizers. 4,497,744, Cl. 260-429.700.

Fay, James E., to James River—Norwalk, Inc. Container structure. 4,497,431, Cl. 229-6.00R.

Fearing, D. Michael; and Johnson, George N., to Fearing Manufacturing Co., Inc. Ear tag applicators. 4,497,321, Cl. 128-330.000.

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Fehrenbach, Siegfried; Herbst, Kurt; and Utz, Eberhard, to Robert Bosch GmbH. Control device with a bimetallic element unilaterally fastened in a housing. 4,497,437, Cl. 236-68.00B.

Feinwerktechnik Schleicher & Co., Firma: *See*—
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Fenley, William F., Jr.: *See*—
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Fern, Derek T., to McDermott Incorporated. Offshore structure and method of sinking same. 4,497,594, Cl. 405-217.000.

Ferrand, Michel; and Durupt, Maurice, to Automobiles Peugot-/Automobiles Citroen. Piston having valves for a damper. 4,497,394, Cl. 188-322.150.

Ferris, Richard A.; Hess, Roger M.; and Garman, James R., to Commercial Modular Systems, Inc. Security enclosure for an automatic teller machine. 4,497,261, Cl. 109-2.000.

Fettweis, Ewald; and Kindler, Wolfgang, to Otto Bock Orthopaedische Industrie KG. Orthopedic device for treating hip displeasure and hip luxation. 4,497,315, Cl. 128-78.000.

Figini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter with means for positioning the typed member. 4,497,589, Cl. 400-706.000.

Finger, Hansjorg, to H. Finger, Firma. Fluid-tight watch case with U-shaped bezel. 4,497,583, Cl. 368-291.000.

Fiorini, Jean-Noel, to Merlin Gerin. Static converter with electric valves comprising a twelve-phase connection with two Graetz bridges for the suppression of harmonics 5 and 7 of network current. 4,498,127, Cl. 363-5.000.

Fischer, Herbert: *See*—
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Fischer & Porter Company: *See*—
Schmoock, Roy F., 4,497,212, Cl. 73-861.120.

Fisher, Charles B.; and Fisher, Sidney T. Keyboard with simultaneous operations. 4,498,073, Cl. 340-365.00S.

Fisher, Robert G.; Meidrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., to British Petroleum Company Limited, The. Method of encapsulating a polluting liquid. 4,497,663, Cl. 134-4.000.

Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,498,073, Cl. 340-365.00S.

Fister, Julius C.: *See*—
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Fitzgerald, John P. Rodent trap. 4,497,130, Cl. 43-98.000.

Fitzgerald, Karen M.: *See*—
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Flachglas Aktiengesellschaft: *See*—
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Flack, John H., deceased (by Flack, Margaret A., administrator); and Simpson, Frank F., to Black & Decker Inc. Hand-held power tools including bearing supports for components undergoing linear movement. 4,497,380, Cl. 173-117.000.

Flack, Margaret A., administrator: *See*—
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Flahive, Peter G.: *See*—
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Fleet, Douglas Ross: *See*—
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Flemm, Roy E.; and Morran, James R., to Aluminum Company of America. Contact device for resistance spot welder. 4,497,994, Cl. 219-109.000.

Flohr, Gary R., to Beloit Corporation. Programmable refiner controller with horsepower-days per ton scaling. 4,498,137, Cl. 364-471.000.

Focke & Co.: *See*—
Focke, Heinz, 4,497,274, Cl. 118-221.000.

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Fog, Arne D.: *See—*
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Ford Motor Company: *See—*
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Mikkor, Mati, 4,497,882, Cl. 429-163.000.
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Forster, Hilmar; and Wonka, Heinz-Georg, to Scharfenbergkupplung GmbH. Mechanical central buffer coupling. 4,497,414, Cl. 213-76.000.
Fortune, William S. Tip assembly having replaceable tip. 4,497,427, Cl. 228-20.000.
Foster Wheeler Energy Corporation: *See—*
Vatsky, Joel; and Schindler, Edmund S., 4,497,263, Cl. 110-347.000.
Fothergill, Noel O., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Signal detecting circuit. 4,498,052, Cl. 330-149.000.
Fournie, Francois J. C.; and Deleuze, Christian J. A., to Compagnie Francaise de Petroles; and Commissariat a l'Energie Atomique. Process for the dehydration of gases containing hydrocarbons. 4,497,640, Cl. 55-16.000.
Fournier, Jean-Pierre: *See—*
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Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, to Baxter Travenol Laboratories, Inc. Separation device manufacture. 4,497,104, Cl. 29-419.00R.
Fox, Daniel J.: *See—*
Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., 4,497,718, Cl. 252-8.750.
Foxx, Mary E.: *See—*
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Francis, Mark S.: *See—*
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Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See—*
Hansmann, Johann; and Fawcett, Frederick, 4,497,256, Cl. 104-11.000.
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Fried, David L.: *See—*
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Frink, Shelby T., to Oime, Inc. Helicopter transportable mud pump. 4,497,614, Cl. 417-238.000.
Fruth, Franz: *See—*
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Fryday Corporation: *See—*
Hice, Jaxon O.; and Webb, Gerald J., 4,497,844, Cl. 426-643.000.
Fuchs, Gerhard; and Wabersich, Ernst, to Korf & Fuchs Systemtechnik GmbH. Nozzle assembly for a metallurgical furnace. 4,497,475, Cl. 266-270.000.
Fuerniss, Stephen J., to Du Pont de Nemours, E. I., and Company. Release compound in negative acting photopolymerizable element. 4,497,889, Cl. 430-260.000.
Fuhreck, John E.: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
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Horikawa, Kazuo; and Arakawa, Satoshi, 4,498,006, Cl. 250-327.200.
Nishioka, Akira; Aotani, Yoshimasa; and Yamasue, Kotaro, 4,497,888, Cl. 430-165.000.
Oono, Hiroshi; and Teshima, Tsutomu, 4,498,005, Cl. 250-327.200.
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Fuji Photo Optical Co., Ltd.: *See—*
Akiyama, Kazuhiro, 4,497,555, Cl. 354-173.100.
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Fujimoto, Ryo, to Canon Kabushiki Kaisha. Color television signal producing device capable of compensating the color signal. 4,498,097, Cl. 358-12.000.
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Hashimoto, Masashi; and Aratani, Matsuhiko, 4,497,738, Cl. 260-239.00A.
Hashimoto, Masashi; Hemmi, Keiji; and Hagiwara, Daijiro, 4,497,801, Cl. 514-15.000.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.
Fujita, Jiro; and Yamane, Iwao, to Mitsubishi Denki Kabushiki Kaisha. Automatic sewing machine and cloth retainer therefor. 4,497,266, Cl. 112-121.110.
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Fukuda, Takeshi, 4,497,665, Cl. 148-1.500.
Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, 4,498,022, Cl. 307-473.000.
Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, 4,497,106, Cl. 29-571.000.
Fujiu, Takamitsu: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, to Shinko Electric Co., Ltd.; and Isuzu Motors Limited. Electromagnetic device. 4,498,066, Cl. 335-281.000.
Fukuda, Hirokazu; and Hashimoto, Masaru, to Tokyo Shibaura Denki Kabushiki Kaisha. Differential amplifier circuit. 4,498,054, Cl. 330-261.000.
Fukuda, Takeshi, to Fujitsu Limited. Method for manufacturing semiconductor device. 4,497,665, Cl. 148-1.500.
Fukuda, Yoshiaki: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
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Fukushima, Osamu: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.
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Fukushima, Yoshiaki: *See—*
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,497,869, Cl. 428-402.000.
Fuller Company: *See—*
Nelson, Jeffrey N.; and Peters, Thomas A., 4,497,122, Cl. 34-68.000.
Funatsu, Tsuneo: *See—*
Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, 4,497,106, Cl. 29-571.000.
Funke, Craig D., to NRG Systems, Inc. Flue box with adjustable counterbalance cap. 4,497,310, Cl. 126-292.000.
Furze, Victor J.; and Howlett, Thomas J., to Molins PLC. Feeding stacks of sheets. 4,497,482, Cl. 271-94.000.
Fuss, Peter S.; and Kosner, Jerry J., to Tellabs, Inc. Universal circuit module mounting structure. 4,498,123, Cl. 361-427.000.
Futami, Toshihiko: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.
Futami, Toshio; Yoshimoto, Shoji; and Yano, Ryuji, to Hitachi, Ltd. Cassette type magnetic bubble memory device. 4,498,152, Cl. 365-1.000.
Futkatsu, Shunzo: *See—*
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.
G. D Societa' per Azioni: *See—*
Mattei, Riccardo, 4,497,143, Cl. 51-248.000.
G & W Electric Company: *See—*
Selsing, Jorgen, 4,497,975, Cl. 174-19.000.
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., to Xerox Corporation. Toner transferring method and apparatus. 4,497,567, Cl. 355-3.0TR.
Gaia, Aldino J., to McGraw-Edison Company. Magnetic arc extinguished fusible elements. 4,498,068, Cl. 337-293.000.
Gaiman, Barry: *See—*
Libby, Charles J., Jr.; and Gaiman, Barry, 4,497,996, Cl. 219-124.340.
Gain, Lorand H., Jr., to AMSTED Industries Incorporated. Seal for post indicator valve assembly. 4,497,340, Cl. 137-556.000.
Gaines, Albert L., to Combustion Engineering, Inc. Compression hub with eddy current prevent means. 4,497,767, Cl. 376-142.000.

Galbraith, Lyle D., to Rocket Research Company. Inflatable buoy. 4,497,632, Cl. 441-30.000.
Galloway, Cecil, to Brownline Pipe Inc. Non-drain valve for sprinkler systems. 4,497,440, Cl. 239-201.000.
Galloway, Michael D.; Gingerich, David J.; and Shaffer, David T., to AMP Incorporated. Electrical hook switch. 4,497,983, Cl. 200-5.00R.
Galwey, Ronald K.; and Kanazawa, Kay K., to International Business Machines Corporation. Instrument for use with an electrochemical cell. 4,498,039, Cl. 323-234.000.
Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., to Vestar Research Incorporated; and City of Hope National Medical Center. Method for labeling phagocytic cells. 4,497,791, Cl. 424-1.100.
Game Time, Inc.: *See*—
West, Donald E., 4,497,484, Cl. 272-113.000.
Gamroth, Michael: *See*—
Barin, Ihsan; Gamroth, Michael; Hesse, Rolf; and Wirosoedirdio, Soegianto, 4,497,780, Cl. 423-88.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Hoppe, Joachim; and Gauch, Wolfgang, 4,497,872, Cl. 428-483.000.
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., to International Business Machines Corporation. Semiconductor structure with improved isolation between two layers of polycrystalline silicon. 4,498,095, Cl. 357-23.000.
Garcia, Tony P. Apparatus for filling a device with a fluid. 4,497,351, Cl. 141-329.000.
Garlick, Fred W., III. Aquatic animal containing devices. 4,498,190, Cl. 383-28.000.
Garman, James R.: *See*—
Ferris, Richard A.; Hess, Roger M.; and Garman, James R., 4,497,261, Cl. 109-2.000.
Garrett Corporation, The: *See*—
Corrigan, Charles E.; and Dodge, Paul R., 4,497,171, Cl. 60-39.750.
Elliott, Harry A.; and White, John T., 4,497,170, Cl. 60-39.030.
Garrett, Thomas R.: *See*—
Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., 4,497,265, Cl. 111-86.000.
Gauch, Wolfgang: *See*—
Hoppe, Joachim; and Gauch, Wolfgang, 4,497,872, Cl. 428-483.000.
Gaudet, James L.; and Chukran, Rudolph E., to International Business Machines Corporation. Document automatic pagination. 4,498,150, Cl. 364-900.000.
Gaudio, Raymond, to Napco Security Systems, Inc. Fault indicator apparatus for a multi-zone intrusion system. 4,498,075, Cl. 340-525.000.
Gaulin Corporation: *See*—
Dexter, Edwin, 4,497,388, Cl. 181-233.000.
Gavrin, Edward S.: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
Geiger, Gary E. Method of inhibiting corrosion and deposition in aqueous systems. 4,497,713, Cl. 210-699.000.
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., to General Electric Company. Compressor auxiliary condenser arrangement adapted to be mounted in a refrigerator machinery compartment. 4,497,183, Cl. 62-295.000.
Gelchinski, Mordechai H.; Romankiw, Lubomyr T.; Vigliotti, Donald R.; and Von Gutfeld, Robert J., to International Business Machines Corporation. Laser-enhanced jet-plating and jet-etching: high-speed maskless patterning method. 4,497,692, Cl. 204-15.000.
Genba, Yasushi: *See*—
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
General Electric Company: *See*—
Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., 4,497,925, Cl. 524-269.000.
Bhavsar, Dilip K., 4,498,172, Cl. 371-25.000.
Carreno, Diether E., 4,497,613, Cl. 416-228.000.
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., 4,497,183, Cl. 62-295.000.
Hale, Thomas E., 4,497,874, Cl. 428-551.000.
Holoyda, Peter W.; Hollenbeck, Dennis W.; and Hill, William D., 4,498,196, Cl. 455-607.000.
Knorowski, Victor J.; and Sheflin, Daniel J., 4,497,612, Cl. 416-198.00A.
Ohno, John M., 4,497,639, Cl. 51-307.000.
Pine, R. Davis, 4,497,587, Cl. 384-117.000.
Rabatin, Jacob G., 4,498,008, Cl. 250-486.100.
Rogers, Terrence E., 4,498,191, Cl. 455-164.000.
True, Thomas T.; Good, William E.; and Bates, William C., 4,498,101, Cl. 358-62.000.
Vandegraaf, Johannes J., 4,498,194, Cl. 455-166.000.
Yeboah, Yaw D.; and Venditti, Michael P., 4,497,942, Cl. 528-12.000.
General Motors Corporation: *See*—
Allen, Karl D.; and Brace, Alan L., 4,497,494, Cl. 277-27.000.
Ament, Frank, 4,497,298, Cl. 123-450.000.
Anderson, Stanley E.; and Hegler, Gary G., 4,497,618, Cl. 418-212.000.
Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., 4,497,532, Cl. 339-112.00R.
Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., 4,497,788, Cl. 423-447.300.
Christiansen, Paul J., 4,497,495, Cl. 277-50.000.
Irwin, Clarence C., 4,497,503, Cl. 280-335.000.
Kopich, Leonard F., 4,497,399, Cl. 192-111.00A.
Lederman, Frederick E., 4,497,523, Cl. 384-613.000.
Paar, Michael S.; and McCarthy, Christopher I., 4,497,307, Cl. 123-90.330.
Rubin, Frank D.; and Schumacher, Roger A., 4,497,176, Cl. 60-584.000.
Salloum, Robert J.; and Atkins, Richard P., 4,497,945, Cl. 528-94.000.
Wright, Dolph D., 4,497,341, Cl. 137-563.000.
General Tire & Rubber Company, The: *See*—
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,497,748, Cl. 260-665.00R.
Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., to Chomerics, Inc. Shielded cable system and method. 4,497,533, Cl. 339-143.00R.
Geo-Centers, Inc.: *See*—
Sandler, Sheldon S., 4,498,086, Cl. 343-807.000.
Geo Vann, Inc.: *See*—
Brieger, Emmet F., 4,497,366, Cl. 166-150.000.
Geophysical Systems Corporation: *See*—
Martin, Lincoln A.; and Fenley, William F., Jr., 4,498,157, Cl. 367-50.000.
Georgens, Harold H.; and Brokaw, A. Ray, to Data Electronics, Inc. Tape cartridge receptacle. 4,498,112, Cl. 360-96.500.
Georgia Tech Research Institute: *See*—
Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., 4,497,637, Cl. 48-111.000.
Geotech Development Corporation: *See*—
Cowling, Albert R., 4,497,712, Cl. 210-691.000.
Gerhard Collardin GmbH: *See*—
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.
Gertsek, Marina: *See*—
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, 4,497,574, Cl. 355-76.000.
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Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.
GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Firma: *See*—
Kralowetz, Bruno, 4,497,195, Cl. 72-402.000.
Ghelli, Giovanni; and Barbon, Alessandro, to Luigi Stoppani S.p.A. Tanning material containing basic chromic sulfate and mercaptoacetic acid. 4,497,634, Cl. 8-94.260.
Ghosh, Atish; and Pasierb, John, to Bally Manufacturing Corporation. Prioritized overlay of foreground objects line buffer system for a video display system. 4,498,079, Cl. 340-725.000.
Giants, Thomas W., to Hughes Aircraft Company. Ethynyl-phenylene-substituted-1,3,5-triazine derivatives and process for their production. 4,497,951, Cl. 544-206.000.
Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., to Chicago Pneumatic Tool Company. Pneumatic hydraulic handheld power unit. 4,497,197, Cl. 72-453.170.
Gibson, Duane M.: *See*—
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., 4,497,232, Cl. 83-831.000.
Gibson, Keith: *See*—
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,497,897, Cl. 435-188.000.
Gillette Company, The: *See*—
Gruner, George P.; and Diederich, Walter J., 4,497,339, Cl. 137-495.000.
Gillilan, James. Power transducer system. 4,497,173, Cl. 60-495.000.
Gillis, Don A. Advancing mechanism and system utilizing same for raising and lowering a work platform. 4,497,591, Cl. 405-198.000.
Gindler, E. Melvin, to Sherwood Medical Company. Specimen embedding composition. 4,497,792, Cl. 424-3.000.
Gingerich, David J.: *See*—
Galloway, Michael D.; Gingerich, David J.; and Shaffer, David T., 4,497,983, Cl. 200-5.00R.
Giolma, William H.; and Morgan, John D., to Texas Instruments Incorporated. Current to frequency converter. 4,498,020, Cl. 307-261.000.
Giroldini, Villiam; and Neri, Carlo, to Anic S.p.A. Synthesizing thiocarbamic acid esters. 4,497,739, Cl. 260-239.0BF.
Glaser, Hermann: *See*—
Vogt, Wilhelm; Glaser, Hermann; and Jagers, Erhard, 4,497,747, Cl. 260-546.000.
Glaverbel: *See*—
Robyn, Pierre; and Deschepper, Pierre, 4,497,473, Cl. 266-44.000.
Glaxo Group Limited: *See*—
Clitherow, John W., 4,497,961, Cl. 549-495.000.
Looker, Brian E., 4,497,956, Cl. 548-194.000.

Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.

Glazunov, Arkady A.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Glickman, David, to International Business Machines Corporation. Comparing input words to a word dictionary for correct spelling. 4,498,148, Cl. 364-900.000.

Gloystein, Jurgen, to Conver Ing. - Technik GmbH & Co., KG. Stowing strut for making fast containers or the like. 4,497,271, Cl. 114-75.000.

Gmeiner, Gunter; Moller, Hermann; Andres, Rudolf; and Faust, Eberhard, to Daimler-Benz Aktiengesellschaft. Motor vehicle seat. 4,497,517, Cl. 297-231.000.

Gnadig, Gerhard; Przybylla, Fritz; and Schneider, Friedrich, to Werner & Pfleiderer. Process for the manufacture of a steel body with a borehole protected against abrasion. 4,497,358, Cl. 164-80.000.

GNB Batteries Inc.: *See—*
Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., 4,497,604, Cl. 414-131.000.

Go, Tony S.: *See—*
Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, 4,497,702, Cl. 208-47.000.

Goldhammer, Albert, to Feinwerktechnik Schleicher & Co., Firma. Baling press with vertical operating direction. 4,497,247, Cl. 100-214.000.

Gonzalez-Doerner, Alberto C.: *See—*
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.

Good, William E.: *See—*
True, Thomas T.; Good, William E.; and Bates, William C., 4,498,101, Cl. 358-62.000.

Goransson, Sture: *See—*
Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,498,004, Cl. 250-227.000.

Gorbunov, Evgeny S.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Gore, Thomas C., to Uarco Incorporated. Continuous business form for automated mailing. 4,497,509, Cl. 282-11.50A.

Gorman, Patrick R.; and Stottlemyer, William O., to ITT Corporation. Handsfree circuit for telephone instrument. 4,497,980, Cl. 179-81.00B.

Gorski, Richard M., to Zenith Electronics Corporation. Ultra-short LoBi electron gun for very short cathode ray tubes. 4,498,028, Cl. 315-15.000.

Gorton, Charles W.: *See—*
Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., 4,497,637, Cl. 48-111.000.

Gorzinski, Manfred; Wilk, Hans-Christoph; Fischer, Herbert; and Wegemund, Bernd, to Henkel Kommanditgesellschaft auf Aktien. Emulsifier-free and solvent-free alkyd resin water lacquers. 4,497,933, Cl. 524-604.000.

Gotoh, Akio: *See—*
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.

Gottfried, Mario H. Flywheel device for a moving vehicle. 4,498,015, Cl. 290-15.000.

Goudie, Robert J.: *See—*
Harrison, Anthony W.; and Goudie, Robert J., 4,497,505, Cl. 280-698.000.

Gould, Max R.; Bone, David P.; and Hsieh, Fu H., to Quaker Oats Company, The. Cereal foods made from oats and method of making. 4,497,840, Cl. 426-560.000.

Govaerts, Karel J.; and Dehouwer, Louis J., to U.S. Philips Corporation. High-pressure sodium vapor discharge lamp with bimetallic element. 4,498,030, Cl. 315-60.000.

Grabbe, Dimitry G.: *See—*
Bakermans, Johannes C. W.; and Grabbe, Dimitry G., 4,497,196, Cl. 72-405.000.

Grable, Donovan B. Metal particle recovery at sub-surface locations. 4,497,519, Cl. 299-8.000.

Graco, Inc.: *See—*
Mommsen, Gordon V.; and Marfatia, Anil, 4,497,447, Cl. 239-691.000.

Grafon AG: *See—*
Schrader, Rolf, 4,497,101, Cl. 29-76.00R.

Graham, Howard A., to National Steel Corporation. Method and apparatus useful in cooling hot strip. 4,497,180, Cl. 62-63.000.

Granger Associates: *See—*
Werner, William L.; and DuHamel, Raymond H., 4,498,084, Cl. 343-792.500.

Granning Suspensions, Inc.: *See—*
Chervenak, Paul R., 4,497,507, Cl. 280-704.000.

Graphic Controls Corporation: *See—*
Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, 4,497,468, Cl. 251-117.000.

Graves, Richard E.: *See—*
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.

Graviner Limited: *See—*
Farquhar, Robert L., 4,497,373, Cl. 169-45.000.

Gravity Guidance, Inc.: *See—*
Miller, Jack V., 4,497,314, Cl. 128-75.000.

Grebowiec, Thaddeus J., to Brockway-Imco Inc. Blow pin assembly. 4,497,622, Cl. 425-525.000.

Griffith, Russell W., to Copeland Corporation. Scroll-type machine. 4,497,615, Cl. 417-310.000.

Grimm, Bernard J.: *See—*
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., 4,497,183, Cl. 62-295.000.

Grinberg, Jan: *See—*
Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., 4,498,134, Cl. 364-200.000.

Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Differential planetary gear system for producing complementary levels of forward/reverse drive. 4,497,220, Cl. 74-792.000.

Gronbech, Robert W.; and Lister, Michael, to Davy McKee (Sheffield) Limited. Hydro-mechanical actuator. 4,497,215, Cl. 74-89.150.

Groshans, Joseph R.: *See—*
Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., 4,497,197, Cl. 72-453.170.

Gross, Dennis A.: *See—*
Bankier, Jack D.; and Gross, Dennis A., 4,497,694, Cl. 204-16.000.

Grosskreuz Abfulltechnik GmbH: *See—*
Grosskreuz, Gerhard; and Lassig, Arndt, 4,497,155, Cl. 53-331.500.

Grosskreuz, Gerhard; and Lassig, Arndt, to Grosskreuz Abfulltechnik GmbH, bH 03. Plug screwing-in device for barrels. 4,497,155, Cl. 53-331.500.

Groth, Rolf; and Muller, Dieter, to Flachglas Aktiengesellschaft. Method of coating a transparent substrate. 4,497,700, Cl. 204-192.00P.

Grube, Dietrich: *See—*
Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, 4,497,193, Cl. 72-302.000.

Gruner, George P.; and Diederich, Walter J., to Gillette Company, The. Two-stage pressure regulator. 4,497,339, Cl. 137-495.000.

Gruner, Ronald H.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.

GTE Automatic Electric Incorporated: *See—*
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,498,059, Cl. 331-1.00A.

GTE Laboratories Incorporated: *See—*
Cogan, Adrian I., 4,497,107, Cl. 29-571.000.
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,497,228, Cl. 82-1.00C.
Winful, Herbert G.; and Cooperman, Gene D., 4,497,535, Cl. 350-96.120.

GTE Products Corporation: *See—*
Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., 4,497,756, Cl. 264-1.900.
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., 4,498,027, Cl. 313-634.000.
Mizuhara, Howard, 4,497,772, Cl. 420-457.000.
Ojanen, Randall W., 4,497,520, Cl. 299-86.000.

Gueguen, Daniel; and Rothera, Jacques, to Autoliv AB. Winder for a safety belt having a rapid locking and unlocking action and a reduced operating noise. 4,497,458, Cl. 242-107.40B.

Guertin, Robert W., to Dover Corporation. Vapor recovery system having automatic shut-off mechanism. 4,497,350, Cl. 141-206.000.

Guggemos, Hans; and Weber, Rolf-Dieter, to Saurer-Allma GmbH. Pneumatic drive for a swingable spool holder. 4,497,451, Cl. 242-37.00R.

Guguen, Claude: *See—*
Bousquet, Jacques; and Guguen, Claude, 4,497,703, Cl. 208-111.000.

Guillory, Jack P.: *See—*
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., 4,497,971, Cl. 585-658.000.

Gulf Research & Development Company: *See—*
Kibby, Charles L.; and Kobylinski, Thaddeus P., 4,497,903, Cl. 502-85.000.

Gulf & Western Manufacturing Company: *See—*
Zulauf, Gary B.; and Charboneau, Ben J., 4,497,205, Cl. 73-313.000.

Gurtler, Hebert & Co., Inc.: *See—*
Simpson, James K., 4,497,372, Cl. 166-381.000.

Guse, Rolf; and Tauber, Norbert, to Trutzschler GmbH & Co. KG. Regulating method and system for producing a uniform sliver in a carding machine. 4,497,086, Cl. 19-105.000.

Gutleber, Frank S., to United States of America, Army. Multiple interference null tracking array antenna. 4,498,083, Cl. 343-380.000.

H-C Industries, Inc.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,497,765, Cl. 264-268.000.

H. Finger, Firma: *See—*
Finger, Hansjorg, 4,497,583, Cl. 368-291.000.
Ratajski, Michel, 4,497,584, Cl. 368-294.000.

Haberkorn, Jerome R. Two-part fastener. 4,497,093, Cl. 24-586.000.

Hackney, Stanley, to United Kingdom Atomic Energy Authority. Filter assembly. 4,497,642, Cl. 55-422.000.

Haderle, Donald J.: *See—*
Baker, Jerry W.; Crus, Richard A.; and Haderle, Donald J., 4,498,145, Cl. 364-900.000.

Hafner, Hans W., to Pfister GmbH. Gyroscopic force measuring cell. 4,497,213, Cl. 73-862.380.

Haga, Yoshihiro: *See*—
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.

Hagen, Helmut; Markert, Juergen; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dichloroquinoline derivatives for use as herbicides. 4,497,651, Cl. 71-94.000.

Hagenmaier, Carl F., Jr.: *See*—
Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., 4,498,133, Cl. 364-200.000.

Hagiwara, Daijiro: *See*—
Hashimoto, Masashi; Hemmi, Keiji; and Hagiwara, Daijiro, 4,497,801, Cl. 514-15.000.

Hagiwara, Masaru: *See*—
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, 4,497,654, Cl. 75-0.5AA.

Hajicek, David J. Regenerative heat and humidity exchanging apparatus. 4,497,361, Cl. 165-7.000.

Hakura, Akira: *See*—
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.

Halcon SD Group, Inc., The: *See*—
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Hale, Thomas E., to General Electric Company. Coated carbide cutting tool insert. 4,497,874, Cl. 428-551.000.

Hall, Harold H., Jr.: *See*—
Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., 4,497,756, Cl. 264-1.900.

Hall, Norman W.: *See*—
Sawran, William R.; Turrill, Frank H.; Newman, John W.; Hall, Norman W.; and Ward, Clifford, 4,497,789, Cl. 423-447.400.

Halliburton Company: *See*—
Borchardt, John K.; and Young, Bill M., 4,497,596, Cl. 405-263.000.

Halluin, Albert P.; and Barnett, Allan E., to Exxon Research & Engineering Co. Coprecipitated Si-Al-metal-particle catalyst. 4,497,907, Cl. 502-235.000.

Hamada, Shigeharu: *See*—
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, 4,497,695, Cl. 204-28.000.

Hamaguchi, Naoru: *See*—
Yoshimura, Yoshinobu; Hamaguchi, Naoru; and Yashiki, Takatsuka, 4,497,809, Cl. 514-206.000.

Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, to Nissan Motor Company, Limited. Ignition system for an internal combustion engine. 4,497,306, Cl. 123-620.000.

Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, to Matsushita Electric Industrial Co., Ltd. Coil inserting apparatus. 4,497,111, Cl. 29-734.000.

Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Full economizer for vehicles. 4,497,291, Cl. 123-179.0BG.

Hamatani, Tomio, to Boeing Company, The. Outward opening electrically powered plug-type cargo door. 4,497,462, Cl. 244-129.500.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held electrically selectable labeler. 4,497,682, Cl. 156-384.000.

Hammerschmidt, Johann: *See*—
Schneider, Heinrich; and Hammerschmidt, Johann, 4,497,097, Cl. 28-112.000.

Hand, Jerry L.: *See*—
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Handa, Shizuo: *See*—
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Haneda, Isamu, to Sharp Kabushiki Kaisha. Electronic apparatus with a display and printer. 4,498,144, Cl. 364-900.000.

Hanelt, Winand: *See*—
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Hanji, Katsumi; and Kawai, Kiyoshi, to Sumitomo Chemical Company, Limited. Solid catalyst component for olefin polymerization. 4,497,906, Cl. 502-110.000.

Hansen, Kenneth N., to Allis-Chalmers Corp. Clutch pedal operating through a fore and aft shaft in a fire wall of a vehicle. 4,497,217, Cl. 74-512.000.

Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., to Hughes Aircraft Company. Segregator functional plane for use in a modular array processor. 4,498,134, Cl. 364-200.000.

Hansmann, Johann; and Fawcett, Frederick, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobile track position correction machine. 4,497,256, Cl. 104-11.000.

Hara, Noriaki: *See*—
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.

Harada, Setsuo; Tsubotani, Shigetoshi; and Asai, Mitsuko, to Takeda Chemical Industries, Ltd. Isomerization of β-lactam compounds. 4,497,742, Cl. 260-245.20T.

Harada, Setsuo; and Okada, Junya, to Takeda Chemical Industries, Ltd. Inclusion compound of lankacidin-group antibiotic and use thereof. 4,497,803, Cl. 514-450.000.

Hargis, Ivan G.: *See*—
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,497,748, Cl. 260-665.00R.

Harman International Industries Incorporated: *See*—
House, William N., 4,497,981, Cl. 179-115.5PS.

Harmon, William A., Jr.: *See*—
Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., 4,497,085, Cl. 19-80.00R.

Harrington, Robert J.: *See*—
Buzard, Paul F.; and Harrington, Robert J., 4,498,198, Cl. 375-91.000.

Harris, James E.: *See*—
Robeson, Lloyd M.; Harris, James E.; and Maresca, Louis M., 4,497,924, Cl. 524-151.000.

Harris, Robert S., to Stant Inc. Fuel system tester and primer. 4,497,290, Cl. 123-179.00G.

Harris, Robert S., to Stant Inc. Fuel-water separator. 4,497,714, Cl. 210-788.000.

Harris, Stephen J.: *See*—
Aldridge, Peter J.; and Harris, Stephen J., 4,498,082, Cl. 340-825.160.

Harrison, Anthony W.; and Goudie, Robert J., to Lucas Industries Public Limited Company. Vehicle suspension systems. 4,497,505, Cl. 280-698.000.

Harrowfield, John M.: *See*—
Sargeson, Alan M.; Herlt, Anthony J.; and Harrowfield, John M., 4,497,737, Cl. 260-239.0BC.

Hart, Lawrence D., to Smith International, Inc. Reamer disassembly. 4,497,384, Cl. 175-315.000.

Harvey, William O. Line holder. 4,497,457, Cl. 242-96.000.

Hashimoto, Masaru: *See*—
Fukuda, Hirokazu; and Hashimoto, Masaru, 4,498,054, Cl. 330-261.000.

Hashimoto, Masashi; and Aratani, Matsuhiko, to Fujisawa Pharmaceutical Co., Ltd. Analogous compounds of cephalosporins, processes for the preparation thereof and pharmaceutical composition comprising the same. 4,497,738, Cl. 260-239.00A.

Hashimoto, Masashi; Hemmi, Keiji; and Hagiwara, Daijiro, to Fujisawa Pharmaceutical Co., Ltd. New peptides, process for preparation thereof and use thereof. 4,497,801, Cl. 514-15.000.

Hashimoto, Motoichi. Method of processing unmilled rice with chaffs attached thereto. 4,497,839, Cl. 426-482.000.

Hashimoto, Shigeyoshi: *See*—
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Hashiya, Yukio: *See*—
Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, 4,498,065, Cl. 335-79.000.

Hatano, Takashi; and Maruyama, Akira, to Konishiroku Photo Industry Co.; Ltd. Photomask material. 4,497,878, Cl. 428-698.000.

Hatayama, Keiji: *See*—
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.

Hatfield, William R.; Heck, Ronald M.; and Hsiung, Thomas H., to Engelhard Corporation. Method for recovering platinum in a nitric acid plant. 4,497,657, Cl. 75-83.000.

Hathaway, Charles T. Method of forming plastic envelopes. 4,497,679, Cl. 156-251.000.

Hawkins, Brian. Compound lever bow sight. 4,497,116, Cl. 33-265.000.

Hawkins, James B.: *See*—
Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., 4,497,085, Cl. 19-80.00R.

Haws, Spencer K. Asparagus cutter. 4,497,113, Cl. 30-124.000.

Hay, Robert D.: *See*—
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Hayashi, Akira: *See*—
Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, 4,497,826, Cl. 514-567.000.

Hayashi, Kiyoshi, to Nippon Kogaku K.K. Zoom lens. 4,497,547, Cl. 350-427.000.

Hayashi, Shoichiro: *See*—
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.

Hayashi, Tomohiko: *See*—
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Hayashi, Yoshimasa; and Ogawa, Naoki, to Nissan Motor Company, Limited. Bearing beam structure. 4,497,292, Cl. 123-195.00H.

Haytayan, Harry M., to Pneutek, Inc. Pneumatic tool. 4,497,377, Cl. 173-15.000.

Hazelrigg, Mark J., Jr.: *See*—
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Heat Extractor Inc.: *See*—
Ben-Shmuel, Dan; and Zacuto, Philip, 4,497,439, Cl. 237-53.000.

Heath, Donald L.; and Chou, Der-Jeou, to ECD-ANR Energy Conversion Company. Thermoelectric device exhibiting decreased stress. 4,497,973, Cl. 136-212.000.

Heathcote, Geoffrey L.; and Hollowell, Alan C., to Rank Organisation Limited, The. Probes for measuring apparatus. 4,498,043, Cl. 324-61.00P.

Heck, Ronald M.: *See*—
Hatfield, William R.; Heck, Ronald M.; and Hsiung, Thomas H., 4,497,657, Cl. 75-83.000.

Hecke, Paul; Burger, Arnulf; and Werther, Heinz-Ulrich, to BASF Aktiengesellschaft. Apparatus for treating printing plates. 4,497,081, Cl. 15-102.000.

Hegler, Gary G.: *See*—
Anderson, Stanley E.; and Hegler, Gary G., 4,497,618, Cl. 418-212.000.
Helbert, John N., to Motorola, Inc. Process for improving adhesion of resist to gold. 4,497,890, Cl. 430-296.000.
Hemmi, Keiji: *See*—
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Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.
Henke, Edward W. Reconstituted leather and method of manufacturing same. 4,497,871, Cl. 428-473.000.
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Gorzinski, Manfred; Wilk, Hans-Christoph; Fischer, Herbert; and Wegemund, Bernd, 4,497,933, Cl. 524-604.000.
Henry, Raymond W., to Texas Instruments Incorporated. On board non-volatile memory programming. 4,498,151, Cl. 364-900.000.
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Schulke, Karl A., 4,497,277, Cl. 118-733.000.
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Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, 4,497,868, Cl. 428-400.000.
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Herbst, Kurt: *See*—
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Herlt, Anthony J.: *See*—
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Hernandez, Jose A., to Wide-Lite International Corporation. Lighting fixture with relamping socket apparatus. 4,498,126, Cl. 362-220.000.
Heronemus, William E. Plate-pin panel heat exchanger and panel components therefor. 4,497,363, Cl. 165-95.000.
Herrmann, Heinz; and Schlosser, Hans-Joachim, to Hoechst Aktiengesellschaft. Electrophotographic liquid developer for the reversal development of negatively-charged images. 4,497,886, Cl. 430-115.000.
Herrmann, John E.: *See*—
Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, 4,497,900, Cl. 436-511.000.
Armstrong, Alan S.; Herrmann, John E.; and Howard, Lawrence V., 4,497,899, Cl. 436-510.000.
Herrmann, John J. Photographic enlargements. 4,497,571, Cl. 355-40.000.
Hess, Hildegard: *See*—
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Hess, Roger M.: *See*—
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Hesse, Rolf: *See*—
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Hexamer, Donald L.; Spence, Randy D.; and Hesselberg, Johnny, to Custom Automation Designs, Inc. Integrated circuit mounting apparatus. 4,498,047, Cl. 324-158.00F.
Hice, Jaxon O.; and Webb, Gerald J., to Fryday Corporation. Method for producing a restructured food product. 4,497,844, Cl. 426-643.000.
Hicks, Donald D. Safety bait dispenser. 4,497,131, Cl. 43-131.000.
Hight, Ralph D.: *See*—
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Hintsch, Otto; and Julich, Werner, to Sulzer Brothers Limited. Clutch arrangement for controlling a heddle of a weaving machine. 4,497,346, Cl. 139-66.00R.
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Hitachi Chemical Company, Ltd.: *See*—
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Hitachi, Ltd.: *See*—
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Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.
Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, 4,497,577, Cl. 356-336.000.
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
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Hobson, Lloyd L. Fork lift truck attachment. 4,497,606, Cl. 414-607.000.
Hodgson, Philip K. G.: *See*—
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Hofer, Alan, to Stanton Magnetics, Inc. Electronic stethoscope for monitoring the operation of a prosthetic valve implanted in a patient's heart. 4,498,188, Cl. 381-67.000.
Hoffman, Jacob M., Jr., to Merck & Co., Inc. Thiatriazine dioxides as gastric anti-secretory agents. 4,497,810, Cl. 514-222.000.
Hoffman, Morris. Camera focusing means. 4,497,554, Cl. 354-160.000.
Hoffmann, Kurt, to Siemens Aktiengesellschaft. Monolithically integrated semiconductor memory. 4,498,154, Cl. 365-149.000.
Hofmann, Heinrich, to U.S. Philips Corporation. Magnetic-tape cassette having a capstan cleaning device. 4,498,115, Cl. 360-132.000.
Hokuyo Automatic Co., Ltd.: *See*—
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Hollowell, Alan C.: *See*—
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Holoyda, Peter W.; Hollenbeck, Dennis W.; and Hill, William D., to General Electric Company. Testable optically isolated control circuit. 4,498,196, Cl. 455-607.000.
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Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, to Ciba-Geigy Corporation. Water-soluble zinc and aluminium phthalocyanines. 4,497,741, Cl. 260-245.770.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Kondo, Makoto, 4,497,285, Cl. 123-41.650.
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Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, to Sony Corporation. Electrostatic printing apparatus. 4,498,090, Cl. 346-159.000.
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Mitchell, Gordon L.; and Tressler, John H., III, 4,497,544, Cl. 350-353.000.
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Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, to Teisan Kabushiki Kaisha; and Daiwa Can Company, Limited. Method of preventing atmosphere from entering heat-insulating container. 4,497,178, Cl. 62-55.000.

Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., to Clemson University. Seeding implement. 4,497,265, Cl. 111-86.000.

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Hooper, Steven J.: *See*—
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Hoppe, Joachim; and Gauch, Wolfgang, to GAO Gesellachaft fur Automation und Organisation mbH. Sealed identification card with blocking layers. 4,497,872, Cl. 428-483.000.

Hori, Haruo: *See*—
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Horie, Fujio: *See*—
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Horii, Kenju: *See*—
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Horikawa, Kazuo; and Arakawa, Satoshi, to Fuji Photo Film Co., Ltd. Radiation image read-out method and apparatus. 4,498,006, Cl. 250-327.200.

Horn, Petr, to Novasina AG. Method and circuitry for measuring the impedance of a sensor. 4,498,044, Cl. 324-65.00R.

Horoldt, Ernst; Kraft, Kurt; and Ritz, Jurgen, to Hoechst Aktiengesellschaft. Molding compositions containing triketoimidazolidine precondensates, their use, and a process for preparing a triketoimidazolidine precondensate composite suitable for this purpose. 4,497,915, Cl. 523-156.000.

Hortel, Thomas C.: *See*—
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Horwitt, Laurence G., to Sun Chemical Corporation. Cigar lighter socket shell driver tool. 4,497,226, Cl. 81-474.000.

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Hoshino Gakki Company, Ltd.: *See*—
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Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, to Sony Corporation; and Hosiden Electronics Co., Ltd. Integrated circuit socket having an improved cover. 4,497,529, Cl. 339-75.00M.

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Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.

Hosooka, Shuuichi; Imai, Tetsuji; and Hori, Haruo, to Yoshida Kogyo K.K. Method for manufacturing a heat insulation sash bar. 4,497,103, Cl. 29-418.000.

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Howard, Lawrence V.: *See*—
Armstrong, Alan S.; Herrmann, John E.; and Howard, Lawrence V., 4,497,899, Cl. 436-510.000.

Howard, Lowell C.; and Peterson, Charles K. Data recording system for cameras. 4,497,552, Cl. 354-106.000.

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Howell, Samuel G.; and Birchall, William R., 4,497,782, Cl. 423-184.000.

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Furze, Victor J.; and Howlett, Thomas J., 4,497,482, Cl. 271-94.000.

Hoyt Manufacturing Corporation: *See*—
Manzone, Richard R., 4,497,690, Cl. 202-181.000.

Hriscisce, Frank: *See*—
Cherukuri, S. Rao; Bilka, Kenneth P.; and Hriscisce, Frank, 4,497,832, Cl. 426-5.000.

Hsia, Chung H.: *See*—
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,497,968, Cl. 585-304.000.

Hsieh, Fu H.: *See*—
Gould, Max R.; Bone, David P.; and Hsieh, Fu H., 4,497,840, Cl. 426-560.000.

Hsiung, Thomas H.: *See*—
Hatfield, William R.; Heck, Ronald M.; and Hsiung, Thomas H., 4,497,657, Cl. 75-83.000.

Huang, I-der: *See*—
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,497,958, Cl. 549-239.000.

Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, to Graphic Controls Corporation. Catheter patency flush flow controller. 4,497,468, Cl. 251-117.000.

Huber, Max, to Sulzer Brothers Limited. X-Shaped packing layers and method of making. 4,497,752, Cl. 261-95.000.

Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , to Siemens Aktiengesellschaft. Method of fabricating light-controlled thyristor utilizing selective etching and ion-implantation. 4,497,109, Cl. 29-578.000.

Huffy Corporation: *See*—
Forbes, Robert C.; and VanderKam, John, 4,497,502, Cl. 280-281.0LP.

Hug, Franz; Johler, Franz; and Franke, Reimar, to Klockner-Humboldt-Deutz AG. Combine harvester with angled axial thresher. 4,497,327, Cl. 130-27.00T.

Hughes Aircraft Company: *See*—
Giants, Thomas W., 4,497,951, Cl. 544-206.000.
Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., 4,498,134, Cl. 364-200.000.

Hughes, Howard C.; and Bertolet, Roy D. Process for polymer coating electrical conductors. 4,497,849, Cl. 427-120.000.

Hughes Tool Company: *See*—
Baugh, John L., 4,497,368, Cl. 166-208.000.

Hughette, Michel: *See*—
Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, 4,497,846, Cl. 426-660.000.

Hull, Frank A., to Carlson, Chesley F. Automated self calibrating exposure computer. 4,498,140, Cl. 364-571.000.

Hulse, Mark M.: *See*—
Anderson, Maynard E.; Marshall, Robert T.; and Hulse, Mark M., 4,497,898, Cl. 436-23.000.

Humber, David C.: *See*—
Phillipps, Gordon H.; Humber, David C., Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.

Hunter, Robert O.; and Fried, David L. High energy laser. 4,498,051, Cl. 330-4.300.

Hurdle, Edmund S.: *See*—
Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., 4,497,718, Cl. 252-8.750.

Hurta, Gary L.; Milberger, Lionel J.; and Williams, Alford M., to Combustion Engineering, Inc. Hydraulic control of subsea well equipment. 4,497,369, Cl. 166-368.000.

Huse, Syouzi: *See*—
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.

Huss, Albin, Jr.: *See*—
Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., 4,497,786, Cl. 423-329.000.

Hutchinson, Daniel M. Wall display device. 4,497,125, Cl. 40-10.00R.

Hutzenlaub, Armin: *See*—
Kampf, Eberhard; and Hutzenlaub, Armin, 4,497,455, Cl. 242-56.900.

Hwang, Edward F.: *See*—
Okamoto, Yoshiyuki; and Hwang, Edward F., 4,497,727, Cl. 252-500.000.

Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., to AT&T Bell Laboratories. Data set diagnostic system. 4,498,186, Cl. 375-7.000.

Ichida, Kozaburo: *See*—
Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, 4,497,674, Cl. 148-156.000.

Ichikawa, Izuo: *See*—
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, 4,497,847, Cl. 427-3.000.

Ichimura, Takeo: *See*—
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.

Ichinomiya, Tsutomu: *See*—
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Idemitsu Kosan Company Limited: *See*—
Katayama, Takao, 4,497,721, Cl. 252-56.00R.

Igarashi, Keiichi: *See*—
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.

Iglesias, David E.: *See*—
Allyn, Christopher L.; Flahive, Peter G.; Iglesias, David E.; Schlosser, Wolfgang O. W.; and Wemple, Stuart H., 4,498,093, Cl. 357-22.000.

Ikeda Bussan Co., Ltd.: *See*—
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.

Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, to Nippon Steel Corporation. Method and apparatus for continuously annealing steel sheet. 4,497,674, Cl. 148-156.000.

Ikegami, Yoshihiko: *See*—
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, 4,497,847, Cl. 427-3.000.

Ikutake, Hiroshi, to Nippon Piston Ring Co., Ltd. Process for manufacturing a piston ring. 4,497,102, Cl. 29-156.600.

Illger, Hans-Walter: *See*—
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.

Imai, Tetsuji: *See*—
Hosooka, Shuuichi; Imai, Tetsuji; and Hori, Haruo, 4,497,103, Cl. 29-418.000.
Imbiel, Herbert; and Herbig, Henning, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for unfolding an antenna netting reflector. 4,498,087, Cl. 343-915.000.
Imperial Chemical Industries PLC: *See*—
Loftus, Frank, 4,497,949, Cl. 544-27.000.
Shepherd, David, 4,497,711, Cl. 210-656.000.
Inagawa, Jun: *See*—
Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, 4,498,175, Cl. 371-37.000.
Inco Alloys International, Inc.: *See*—
Wang, Kathy K.; and Robinson, Mark L., 4,497,669, Cl. 148-11.50P.
Ing. C. Olivetti & C., S.p.A.: *See*—
Figini, Mario, 4,497,589, Cl. 400-706.000.
Scardovi, Alessandro, 4,498,089, Cl. 346-140.00R.
Ingold, Daniel L.; and Stewart, Robert L., to Appropriate Technology Corporation. Venting system for insulating window shade. 4,497,436, Cl. 236-49.000.
Inoue, Kazuo; and Yamagata, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Electronic fuel injection control system for internal combustion engines, including means for detecting engine operating condition parameters. 4,497,301, Cl. 123-486.000.
Inoue, Ryusaburo: *See*—
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.
Inspector, Elizabeth. Boot tree. 4,497,080, Cl. 12-128.00R.
Insta-Print, Inc.: *See*—
Cooperberg, Bruce; and Peck, Gene E., 4,497,558, Cl. 354-303.000.
Institut Francais du Petrole: *See*—
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.
Intercraft Designs Limited: *See*—
Luck, Terry C.; and Marsden, Paul R., 4,497,356, Cl. 160-135.000.
International Business Machines Corporation: *See*—
Advani, Hira; and Cason, William C., 4,498,142, Cl. 364-900.000.
Agnew, Palmer W.; Kellerman, Anne S.; and Randall, Grayson W., 4,498,147, Cl. 364-900.000.
Baker, Jerry W.; Crus, Richard A.; and Haderle, Donald J., 4,498,145, Cl. 364-900.000.
Faris, Sadeg M.; Moskowitz, Paul A.; Davidson, Arthur; and Sai-Halasz, George A., 4,498,046, Cl. 324-158.00F.
Galwey, Ronald K.; and Kanazawa, Kay K., 4,498,039, Cl. 323-234.000.
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,498,095, Cl. 357-23.000.
Gaudet, James L.; and Chukran, Rudolph E., 4,498,150, Cl. 364-900.000.
Gelchinski, Mordechai H.; Romankiw, Lubomyr T.; Vigliotti, Donald R.; and Von Gutfeld, Robert J., 4,497,692, Cl. 204-15.000.
Glickman, David, 4,498,148, Cl. 364-900.000.
Kaplan, Leon H.; and Kaplan, Richard D., 4,497,891, Cl. 430-296.000.
Sincerbox, Glenn T., 4,497,534, Cl. 350-3.720.
Sproul, William W., III, 4,498,136, Cl. 364-200.000.
International Standard Electric Corporation: *See*—
Chown, David P. M., 4,498,197, Cl. 455-619.000.
International Telephone and Telegraph Corporation: *See*—
Bowen, James H., 4,498,167, Cl. 370-44.000.
Interox Chemicals Ltd.: *See*—
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,497,725, Cl. 252-102.000.
Irish , William D.: *See*—
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., 4,497,183, Cl. 62-295.000.
Irwin, Clarence C., to General Motors Corporation. Hydraulic control system for vehicle. 4,497,503, Cl. 280-335.000.
Irwin Magnetic Systems, Inc.: *See*—
Velazquez, Juan F., 4,498,129, Cl. 364-174.000.
Ishibashi, Hiroe: *See*—
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.
Ishida, Kazuhiro: *See*—
Yano, Ryuji; Chiba, Shinsaku; Yoshida, Kazutoshi; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,498,153, Cl. 365-10.000.
Ishida, Tokuji, to Minolta Camera Kabushiki Kaisha. Exposure control device for flash photography. 4,497,562, Cl. 354-416.000.
Ishihara, Shoichi: *See*—
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,497,724, Cl. 252-70.000.
Ishikawa, Takayoshi: *See*—
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
Isliker, Gaston R.: *See*—
Meyer, Helmut P.; and Isliker, Gaston R., 4,497,633, Cl. 445-7.000.
Isono, Tokio: *See*—
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Isuzu Motors Limited: *See*—
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.
Ito, Hiroshi: *See*—
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Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.
Ito, Koichi: *See*—
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.
Itoh, Akira; and Takemura, Akira, to Mitsubishi Paper Mills, Ltd. Colored silver halide photographic photosensitive materials. 4,497,894, Cl. 430-522.000.
Itoh, Takuji; and Akitsuki, Ikuo, to Toa Nenryo Kogyo Kabushiki Kaisha. Hydrogenation process. 4,497,909, Cl. 502-262.000.
ITT Corporation: *See*—
Gorman, Patrick R.; and Stottlemyer, William O., 4,497,980, Cl. 179-81.00B.
ITT Industries, Inc.: *See*—
Michalski, Dieter, 4,497,982, Cl. 200-5.00R.
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., to Tsentralny Iauchno-Issledovatelsky Dizelny Institut. Internal combustion engine. 4,497,309, Cl. 123-276.000.
Iwamoto, Noritada: *See*—
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
Iwans, Robert C., to Coca-Cola Company, The. Ice bank control system for beverage dispenser. 4,497,179, Cl. 62-59.000.
Iwasawa, Nobuyuki; and Kazato, Keiji, to Toppan Printing Co. Ltd. Multi-layered hollow container. 4,497,856, Cl. 428-35.000.
Iwashita, Koichi: *See*—
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.
Izumi, Kouichi; and Hiyama, Yasuhiro, to Diesel Kiki Co., Ltd. Electronically controlled governor for diesel engines. 4,497,294, Cl. 123-357.000.
Izumita, Morishi: *See*—
Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.
Izzo, Anthony J.: *See*—
Provost, Alfred M., 4,497,077, Cl. 4-628.000.
J. M. Huber Corporation: *See*—
Wason, Satish K., 4,497,918, Cl. 523-220.000.
J. M. Voith GmbH: *See*—
Elsner, Ernst, 4,497,219, Cl. 74-790.000.
J & P Coats, Limited: *See*—
Scott, Alexander, 4,497,099, Cl. 28-220.000.
Jaegers, Heinz: *See*—
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Jagers, Erhard: *See*—
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Jakusch, Helmut: *See*—
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James River—Norwalk, Inc.: *See*—
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Janberg, Klaus: *See*—
Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, 4,498,011, Cl. 250-507.100.
Jarby, Sven. Smoothing, cutting and polishing tool. 4,497,141, Cl. 51-168.000.
Jarry, Christian: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,497,812, Cl. 514-211.000.
Jerobee Industries, Inc.: *See*—
Weglin, Walter, 4,497,686, Cl. 156-651.000.
Jes, Otto J., to Willamette Industries, Inc. Stackable container with locking lid. 4,497,408, Cl. 206-509.000.
Jessen, Jens-Christian: *See*—
Lucke, Hans-Hermann; and Jessen, Jens-Christian, 4,497,879, Cl. 429-62.000.
Jezbera, Val K., to Dataproducts Corporation. Method of making a hammer bank assembly. 4,497,110, Cl. 29-602.00R.
Jha, Mahesh C.: *See*—
Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., 4,497,779, Cl. 423-72.000.
Joa, Curt G.; and Radzins, Edmund, to Curt G. Joa, Inc. Offset orbit fluff generator. 4,497,448, Cl. 241-186.400.
Johannson, Richard J., to Towmotor Corporation. Fork position retainer. 4,497,607, Cl. 414-664.000.
Johler, Franz: *See*—
Hug, Franz; Johler, Franz; and Franke, Reimar, 4,497,327, Cl. 130-27.00T.
Johnson, Axel R.; and Woebcke, Herman N., to Stone & Webster Engineering Corp. Fuel gas generation for solids heating. 4,497,638, Cl. 48-197.00R.
Johnson, Delp W. Method of constructing and assembling building elements for foldably constructed stadiums. 4,497,154, Cl. 52-745.000.
Johnson, George N.: *See*—
Fearing, D. Michael; and Johnson, George N., 4,497,321, Cl. 128-330.000.
Johnson, Harold K.: *See*—
Becker, Arnold F.; and Johnson, Harold K., 4,498,192, Cl. 383-126.000.

Johnson, J. Darrel. Vegetation blocking fence edging assembly. 4,497,472, Cl. 256-32.000.

Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., to Dennison Manufacturing Company. Ink stamp pad and reservoir. 4,497,275, Cl. 118-268.000.

Johnson, Robert R. Ash receptacle with dust eliminator. 4,497,308, Cl. 126-242.000.

Johnson, Russell W.: *See—*
O'Hara, Mark J.; and Johnson, Russell W., 4,497,704, Cl. 208-112.000.

Johnson Service Company: *See—*
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Jones, Thomas M.: *See—*
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Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Joynes, Brian: *See—*
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JS Technology, Inc.: *See—*
Stasiek, Jan S., 4,497,227, Cl. 81-63.100.

Jujo Paper Co., Ltd.: *See—*
Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, 4,498,091, Cl. 346-216.000.

Julich, Werner: *See—*
Hintsch, Otto; and Julich, Werner, 4,497,346, Cl. 139-66.00R.

Jundt, Wolfgang: *See—*
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.

Jungverdorben, Hermann J.: *See—*
Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, 4,497,868, Cl. 428-400.000.

Jurgens, Reiner, to Norton Christensen, Inc. Apparatus for making and breaking screw couplings. 4,497,224, Cl. 81-57.340.

Kabushiki Kaisha Daini Seikosha: *See—*
Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, 4,497,235, Cl. 84-1.190.
Saito, Yasuhiro; and Tatemichi, Takaomi, 4,497,977, Cl. 178-19.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Sashiki, Takashi, 4,497,385, Cl. 177-59.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.

Kabushiki Kaisha Medos Kenkyusho: *See—*
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, 4,497,550, Cl. 350-584.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Tatsushi, Asakawa; and Shinji, Morozumi, 4,498,040, Cl. 323-299.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Anahara, Meiji; and Suzuki, Yoshihisa, 4,497,089, Cl. 19-288.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,497,869, Cl. 428-402.000.

Kabushikigaisha Nippon Kogu Seisakusho: *See—*
Kishimoto, Kiyoshi, 4,497,600, Cl. 407-53.000.

Kackos, Edward M.: *See—*
Kuelzow, Christopher J.; Kackos, Edward M.; and Murray, Francis J., 4,497,773, Cl. 422-26.000.

Kaiser, Peter: *See—*
Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, 4,498,185, Cl. 373-93.000.

Kaiser Steel (Delaware), Inc.: *See—*
Oswald, Donald E., 4,497,837, Cl. 426-398.000.

Kaji, Kiyokane: *See—*
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.

Kakuta, Toshio: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.

Kalama Chemical, Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,497,955, Cl. 546-345.000.

Kali-Chemie Pharma GmbH: *See—*
Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,497,740, Cl. 260-244.400.

Kameyama, Koji: *See—*
Deguchi, Naoyasu; Kameyama, Koji; and Nakamura, Taku, 4,497,893, Cl. 430-359.000.

Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Formed product of vermiculite and method for producing the same. 4,497,869, Cl. 428-402.000.

Kamp, Heinz, to W. Schlafhorst & Co. Method and apparatus for open-end spinning. 4,497,168, Cl. 57-401.000.

Kampf, Eberhard; and Hutzenlaub, Armin, to Erwin Kampf GmbH & Co Maschinenfabrik. Winding machine. 4,497,455, Cl. 242-56.900.

Kanayama, Yoshio, to Sharp Kabushiki Kaisha. Ink jet air bubble detection. 4,498,088, Cl. 346-140.00R.

Kanazawa, Kay K.: *See—*
Galwey, Ronald K.; and Kanazawa, Kay K., 4,498,039, Cl. 323-234.000.

Kanazawa, Yuzo: *See—*
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.

Kaneda, Michihiro: *See—*
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.

Kaneko, Mamoru: *See—*
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.

Kanto Denka Kogyo Co., Ltd.: *See—*
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, 4,497,654, Cl. 75-0.5AA.

Kanzelberger, James C.; and Deau, William J., to Contemporary Inc. Thermal engraving presses. 4,497,248, Cl. 104-27.000.

Kao Corporation: *See—*
Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, 4,497,930, Cl. 524-556.000.

Kaplan, Leon H.; and Kaplan, Richard D., to International Business Machines Corporation. Dry-developed, negative working electron resist system. 4,497,891, Cl. 430-296.000.

Kaplan, Richard D.: *See—*
Kaplan, Leon H.; and Kaplan, Richard D., 4,497,891, Cl. 430-296.000.

Kariya, Michio: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.

Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., to GTE Products Corporation. Arc discharge lamp with improved starting capabilities, improved efficacy and maintenance, and line-of-sight arched arc tube for use therewith. 4,498,027, Cl. 313-634.000.

Karos, Lisa M. Pierced ear cleaning and sterilizing apparatus. 4,497,402, Cl. 206-210.000.

Kashino, Shinzo: *See—*
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.

Kataev, Evgeny M.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Katakura, Masayuki; and Tenma, Takumi, to Sony Corporation. Current amplifier. 4,498,053, Cl. 330-261.000.

Katayama, Takao, to Idemitsu Kosan Company Limited. Refrigerator oil composition. 4,497,721, Cl. 252-56.00R.

Katou,Hatsujo Kaisha Ltd.: *See—*
Ohkata, Ichizo, 4,497,241, Cl. 98-40.250.

Katz, Bernard B.: *See—*
Levatter, Jeffrey I., 4,498,183, Cl. 372-86.000.

Katz, Lawrence H.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Kaufman, Lance R. Electrical sub-assembly having a lead frame to be compressed between a circuit board and heat sink. 4,498,120, Cl. 361-386.000.

Kaveh, Farrokh, to Owens-Corning Fiberglas Corporation. Blower for the attenuation of fibers. 4,497,644, Cl. 65-14.000.

Kawabata, Hidetsugu: *See—*
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.

Kawabata, Yuichi: *See—*
Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, 4,498,022, Cl. 307-473.000.

Kawaharada, Junji: *See—*
Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, 4,498,065, Cl. 335-79.000.

Kawai, Kiyoshi: *See—*
Hanji, Katsumi; and Kawai, Kiyoshi, 4,497,906, Cl. 502-110.000.

Kawamoto, Tamio, to Nissan Motor Company, Limited. Gear operating mechanism of an automotive manual transmission. 4,497,216, Cl. 74-475.000.

Kawamura, Yoshimi: *See—*
Ebata, Mitsuo; Miyake, Yukio; and Kawamura, Yoshimi, 4,497,797, Cl. 424-118.000.

Kawasaki, Hironobu: *See—*
Umezono, Akimi; Kawasaki, Hironobu; Sato, Takashi; and Hayashi, Tomohiko, 4,497,850, Cl. 427-127.000.

Kaye, Wilbur I., to Beckman Instruments, Inc. Apparatus for minimizing beam collimation sensitivity in optical instruments including liquid crystal cells. 4,497,542, Cl. 350-335.000.

Kazato, Keiji: *See—*
Iwasawa, Nobuyuki; and Kazato, Keiji, 4,497,856, Cl. 428-35.000.

Kedem, Tuval, to Equipment Company of America. Pallet truck with hydraulic lift. 4,497,501, Cl. 280-43.120.

Keller, Herbert, to Kraftwerk Union Aktiengesellschaft. Device for vibration damping in a guide vane ring. 4,497,611, Cl. 415-191.000.
Kellerman, Anne S.: *See*—
Agnew, Palmer W.; Kellerman, Anne S.; and Randall, Grayson W., 4,498,147, Cl. 364-900.000.
Kemisk Vaerk Koge A/S: *See*—
Olsen, Steffen C.; and Vinther, Arne, 4,497,735, Cl. 534-603.000.
Kemp, John: *See*—
Sall, Surinderpal S.; and Kemp, John, 4,497,493, Cl. 277-2.000.
Ken, Victor: *See*—
Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, 4,497,666, Cl. 148-6.15R.
Kennecott Corporation: *See*—
Nunlist, Erwin J., 4,497,418, Cl. 220-234.000.
Kenro Corporation: *See*—
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, 4,497,574, Cl. 355-76.000.
Kestner, Diane E.: *See*—
Upson, Donald A.; and Kestner, Diane E., 4,497,917, Cl. 523-201.000.
Kettl, Henry G. Beehive aerator. 4,497,079, Cl. 6-1.000.
Khallil, George. Self-adjusting weather strip. 4,497,136, Cl. 49-481.000.
Khasin, Marra: *See*—
Pickett, Charles G.; Charney, John G.; and Khasin, Marra, 4,497,706, Cl. 210-130.000.
Kibby, Charles L.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Activated cobalt-substituted layered aluminosilicate for synthesis gas conversion. 4,497,903, Cl. 502-85.000.
Kidon, William E. Corrosion resistant metal composite with zinc and chromium coating. 4,497,876, Cl. 428-624.000.
Killinger, Karl H., to Singer Company, The. Top work feeding arrangement for a chain stitch sewing machine. 4,497,268, Cl. 112-169.000.
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., to Korea Advanced Institute of Science and Technology. Process for the production of (±)-4-oxo-1,2,3,6,7,11b-hexahydro-4H-pyrazino[2,1-a]isoquinoline derivatives. 4,497,952, Cl. 544-344.000.
Kim, Joong H.: *See*—
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., 4,497,952, Cl. 544-344.000.
Kimble, James B.: *See*—
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., 4,497,971, Cl. 585-658.000.
Kimura, Kenji, to Olympus Optical Co., Ltd. Optical disc reproducing apparatus. 4,498,110, Cl. 358-342.000.
Kimura, Tadakatsu: *See*—
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
Kimura, Takeo: *See*—
Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, 4,497,095, Cl. 26-2.00R.
Kimura, Tomio: *See*—
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
Kimura, Yoshimasa: *See*—
Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, 4,497,568, Cl. 355-14.00R.
Kin, Niles: *See*—
Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, 4,497,468, Cl. 251-117.000.
Kindler, Wolfgang: *See*—
Fettweis, Ewald; and Kindler, Wolfgang, 4,497,315, Cl. 128-78.000.
Kinetronics Corporation: *See*—
Stelcher, William N.; and Murdock, Michael J., 4,497,420, Cl. 221-13.000.
King, Dennis M.: *See*—
Earleson, Walter E.; King, Dennis M.; and Moncelle, Michael E., 4,498,016, Cl. 290-40.00R.
King Instrument Corporation: *See*—
Woodley, George M., 4,497,454, Cl. 242-56.00R.
King, James P.; and Tubbs, Paul, to Pennwalt Corporation. Metal salts of 1,2,4-thiadiazole and lubricants containing these metal salts. 4,497,719, Cl. 252-42.700.
King Seeley Thermos Company: *See*—
Utter, Robert P.; and Tandeski, David A., 4,497,184, Cl. 62-354.000.
Kirihara, Seishin: *See*—
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
Kishimoto, Kiyoshi, to Kabushikigaisha Nippon Kogu Seisakusho. End mill. 4,497,600, Cl. 407-53.000.
Kisiel, Stanley C., to Dresser Industries, Inc. Frangible valve stem assembly for rotary valve. 4,497,344, Cl. 137-797.000.
Kistner, John F., to Minnesota Mining and Manufacturing Company. Water-repellent, abrasion resistant coatings. 4,497,861, Cl. 428-201.000.
Kitamura, Hajime: *See*—
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, 4,497,722, Cl. 252-62.540.
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, to Matsushita Electric Industrial Co., Ltd. Solar energy storage materials. 4,497,724, Cl. 252-70.000.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, to Fujisawa Pharmaceutical Co., Ltd. Peptide, process for preparation thereof and use thereof. 4,497,729, Cl. 260-112.50R.
Kiwior, Denis; and Riner, Victor, to Societe Alsacienne de Construction de Materiel Textile. Mechanism for actuating the weft-inserting needles of a weaving loom. 4,497,347, Cl. 139-449.000.
Klees, Garry W. Pouring cap. 4,497,422, Cl. 222-482.000.
Klein, Robert W.; and Foxx, Mary E., to Dermik Laboratories, Inc. Erythromycin/benzoyl peroxide composition for the treatment of acne. 4,497,794, Cl. 424-81.000.
Kleinewefers GmbH: *See*—
Pav, Josef; and Jaegers, Heinz, 4,497,246, Cl. 100-35.000.
Klockner-Humboldt-Deutz AG: *See*—
Barin, Ihsan; Gamroth, Michael; Hesse, Rolf; and Wirosoedirdio, Soegianto, 4,497,780, Cl. 423-88.000.
Hug, Franz; Johler, Franz; and Franke, Reimar, 4,497,327, Cl. 130-27.00T.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Schleiermacher, Herbert; and Bauer, Lothar, 4,497,287, Cl. 123-52.0MC.
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., to Syntex (U.S.A.) Inc. 2-(1,4-Benzodioxan-2-ylalkyl-)imidazoles useful as antihypertensives and platelet aggregation inhibitors. 4,497,818, Cl. 514-397.000.
Knight, James A., Jr.: *See*—
Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., 4,497,637, Cl. 48-111.000.
Knorowski, Victor J.; and Sheflin, Daniel J., to General Electric Company. Steam turbine wheel antirotation means. 4,497,612, Cl. 416-198.00A.
Knutsen, Michael P.: *See*—
Balder, Richard T.; and Knutsen, Michael P., 4,497,278, Cl. 119-26.000.
Kobashi, Rikiya: *See*—
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.
Kobayashi, Hiroshi; and Machida, Haruhiko, to Machida Endoscope Company Limited. Method for manufacturing quadric surface. 4,497,144, Cl. 51-284.00R.
Kobayashi, Hiroshi, to Nissan Motor Company, Limited. Liquid gauge. 4,497,204, Cl. 73-304.00C.
Kobayashi Katsuyoshi: *See*—
Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, 4,497,674, Cl. 148-156.000.
Kobayashi, Kei: *See*—
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
Kobayashi, Takatoshi: *See*—
Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, 4,497,930, Cl. 524-556.000.
Kobayashi, Yuko, to Olympus Optical Co., Ltd. Wide-field eyepiece. 4,497,546, Cl. 350-410.000.
Kobylinski, Thaddeus P.: *See*—
Kibby, Charles L.; and Kobylinski, Thaddeus P., 4,497,903, Cl. 502-85.000.
Kocher, Erich J.; and Kopp, John K., to Vilter Manufacturing Corporation. Means to measure, indicate and regulate thickness of ice layer in refrigeration system. 4,497,181, Cl. 62-139.000.
Kodama, Hitoshi: *See*—
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, to Mitsubishi Denki Kabushiki Kaisha. Air circuit breaker. 4,497,992, Cl. 200-153.0SC.
Koe, Joe K.: *See*—
Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, 4,497,391, Cl. 187-29.00R.
Koehler, Richard F., Jr.: *See*—
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.
Koester, Eberhard: *See*—
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.
Kogasaka, Fukuhei. Cleaning cloth for gun and cannon bores. 4,497,082, Cl. 15-104.165.
Kohlhage, Hermann: *See*—
Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, 4,497,588, Cl. 400-645.100.
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, to Toyoda Koki Kabushiki Kaisha. Cam grinding machine. 4,497,140, Cl. 51-101.00R.
Koiki, Eishi, to Ozen Corporation. Simplified record player capable of automatically housing reproducing stylus upon removal of record disc from the record player. 4,498,160, Cl. 369-63.000.
Koitabashi, Takeo: *See*—
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Kojima, Masakatu, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for producing monocrystalline silicon. 4,497,777, Cl. 422-249.000.
Kojima, Tadashi: *See*—
Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, 4,498,175, Cl. 371-37.000.

Koma, Yoshishige: *See*—
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, 4,497,654, Cl. 75-0.5AA.
Komatsu, Nobiru: *See*—
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.
Komitet po Goelogica: *See*—
Nenkov, Nikolay D., 4,497,382, Cl. 175-260.000.
Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, to Canon Kabushiki Kaisha. Image formation apparatus. 4,497,568, Cl. 355-14.00R.
Komoro, Hidemasa: *See*—
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.
Komoto, Haruo: *See*—
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, 4,497,695, Cl. 204-28.000.
Komura, Hirotsugu: *See*—
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.
Komura, Ichiroh: *See*—
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, 4,497,210, Cl. 73-602.000.
Kondo, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Cooling structure for internal combustion engine. 4,497,285, Cl. 123-41.650.
Kondo, Tomoyoshi: *See*—
Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, 4,497,826, Cl. 514-567.000.
Konishi, Hideyuke: *See*—
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Hatano, Takashi; and Maruyama, Akira, 4,497,878, Cl. 428-698.000.
Matsushima, Kohji; Nakagawa, Yasutsugu; and Yagi, Michio, 4,497,563, Cl. 354-429.000.
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Sakurai, Kunio; Ito, Hiroshi; and Nozaki, Takashi, 4,497,539, Cl. 350-164.000.
Kontz, Robert F.; and Moore, Gary L., to Owens-Illinois, Inc. Apparatus and method for applying heat shrinkable conical plastic labels on containers. 4,497,681, Cl. 156-363.000.
Kopich, Leonard F., to General Motors Corporation. Adjusting mechanism for a manually operated clutch. 4,497,399, Cl. 192-111.00A.
Kopp, John K.: *See*—
Kocher, Erich J.; and Kopp, John K., 4,497,181, Cl. 62-139.000.
Koppens Machinefabriek B.V.: *See*—
Koppens, Wilhelmus F. A., 4,497,244, Cl. 99-494.000.
Koppens, Wilhelmus F. A., to Koppens Machinefabriek B.V. Device for covering foodstuff with granular and/or powdery material. 4,497,244, Cl. 99-494.000.
Kordomenos, Panagiotis I., to Ford Motor Company. Thermosetting coating composition - V. 4,497,938, Cl. 525-514.000.
Korea Advanced Institute of Science and Technology: *See*—
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., 4,497,952, Cl. 544-344.000.
Korf & Fuchs Systemtechnik GmbH: *See*—
Fuchs, Gerhard; and Wabersich, Ernst, 4,497,475, Cl. 266-270.000.
Korsyn, Dever J. Method for repairing articles. 4,497,755, Cl. 264-1.700.
Koser, Manfred. Variable gear transmission system. 4,497,221, Cl. 74-793.000.
Kosner, Jerry J.: *See*—
Fuss, Peter S.; and Kosner, Jerry J., 4,498,123, Cl. 361-427.000.
Kowa Shoji Kabushiki Kaisha: *See*—
Mori, Kashichi, 4,497,245, Cl. 99-542.000.
Kowata, Nobuo; and Sasano, Naoshige. Optical fiber junction device and method of making the same. 4,497,643, Cl. 65-4.210.
Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, to Fujitsu Limited. Tristate output buffer with high-impedance state responsive to increase in power supply voltage. 4,498,022, Cl. 307-473.000.
Kraemer, Edgar: *See*—
Mailliet, Pierre; and Kraemer, Edgar, 4,497,379, Cl. 173-39.000.
Kraft, Helmut; and Ledjeff, Konstantin, to United States of America, Energy. Recombination device for storage batteries. 4,497,880, Cl. 429-86.000.
Kraft, Kurt: *See*—
Horoldt, Ernst; Kraft, Kurt; and Ritz, Jurgen, 4,497,915, Cl. 523-156.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Keller, Herbert, 4,497,611, Cl. 415-191.000.
Krakowski, David: *See*—
Wendt, Alan C.; and Krakowski, David, 4,497,150, Cl. 52-242.000.
Kralowetz, Bruno, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Firma. Swaging machine. 4,497,195, Cl. 72-402.000.
Kramer, James H., to B. F. Goodrich Company, The. Floating structures. 4,497,593, Cl. 405-212.000.
Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., to Amax Inc. Production of potassium hexafluotitanates using dilute hydrofluoric acid. 4,497,779, Cl. 423-72.000.
Kramer, Petrus A.: *See*—
van Helden, Robert; and Kramer, Petrus A., 4,497,966, Cl. 568-705.000.
Krapcho, John; and Wade, Peter C., to E. R. Squibb & Sons, Inc. Imido, amido and amino derivatives of mercaptoacyl prolines and pipecolic acids. 4,497,953, Cl. 546-99.000.
Krauss-Maffei Aktiengesellschaft: *See*—
Schmitz, Horst; and Krompass, Wolfgang, 4,497,579, Cl. 366-134.000.
Krautkramer-Branson, Inc.: *See*—
Rutloh, Max, 4,497,211, Cl. 73-606.000.
Krieg, Uwe: *See*—
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.
Krieger, Friedrich, to Salzgitter AG. Storage structure for nuclear waste. 4,497,770, Cl. 376-272.000.
Krijl, Gerrit; and Van de Leest, Renaat E., to U.S. Philips Corporation. Metal article layered with a nickel-phosphorus alloy and a protective coating. 4,497,877, Cl. 428-628.000.
Krishnan, Sivaram: *See*—
Sanderson, John R.; and Krishnan, Sivaram, 4,497,947, Cl. 528-174.000.
Krompass, Wolfgang: *See*—
Schmitz, Horst; and Krompass, Wolfgang, 4,497,579, Cl. 366-134.000.
Krones A.G. Hermann Kronseder Maschinenfabrik: *See*—
Cibis, Johannes, 4,498,003, Cl. 250-223.00B.
Kruckenberg, Winfried; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Azo dyestuffs. 4,497,736, Cl. 534-855.000.
Krupp Polysius AG: *See*—
Schulte, Hans-Gerd, 4,497,761, Cl. 264-66.000.
Kubo, Seiji: *See*—
Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, 4,497,240, Cl. 98-2.010.
Kubota, Ltd.: *See*—
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.
Kubota, Tadashi: *See*—
Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, 4,497,111, Cl. 29-734.000.
Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, to Nihon Tokushu Noyaku Seizo K.K. Insecticidal, acaricidal, and nematicidal O-ethyl S-alkyl S-(1,2,4-oxadiazol-5-yl-methyl) phosphorodithiolate derivatives, compositions, and methods of use. 4,497,804, Cl. 514-92.000.
Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., to American Can Company. Apparatus for simultaneously driving valve means through co-injection nozzles of a multi-cavity injection molding machine. 4,497,621, Cl. 425-145.000.
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, to Matsushita Electric Industrial Co., Ltd. Magneto-optical recording medium. 4,497,870, Cl. 428-457.000.
Kuelzow, Christopher J.; Kackos, Edward M.; and Murray, Francis J., to Vernitron Corporation. Process and apparatus for shortening the drying stage of a steam sterilization cycle. 4,497,773, Cl. 422-26.000.
Kuhnis, Hans: *See*—
Zimmermann, Markus; and Kuhnis, Hans, 4,497,808, Cl. 514-222.000.
Kulik, Joseph S., Jr.: *See*—
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., 4,498,027, Cl. 313-634.000.
Kumada, Akira: *See*—
Murata, Michihiro; and Kumada, Akira, 4,497,701, Cl. 204-430.000.
Kume, Toyohiko: *See*—
Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,497,804, Cl. 514-92.000.
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, to Robert Bosch GmbH. Low noise planing machine, particularly hand planer. 4,497,354, Cl. 145-4.000.
Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, to Murata Manufacturing Co., Ltd. Small-size inductor. 4,498,067, Cl. 336-65.000.
Kuniya, Keiichi: *See*—
Arakawa, Hideo; Kuniya, Keiichi; Chiba, Akio; and Shimizu, Seiki, 4,497,875, Cl. 428-620.000.
Kunz, Walter: *See*—
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.
Kunz, Walter E.: *See*—
Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., 4,497,768, Cl. 376-153.000.
Kupchik, Eugene J.; and Pisano, Michael A., to St. John's University. Triorganotin compounds, antifungal and antibacterial compositions containing same, and method of using same. 4,497,806, Cl. 514-189.000.
Kuraishi, Yoshiaki: *See*—
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, to Sankyo Company, Limited. Process for coating solid pharmaceutical preparations and coated preparations thus obtained. 4,497,847, Cl. 427-3.000.
Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, to Matsushita Electric Industrial Co., Ltd. Solid state image sensor exhibiting reduced image smearing effects. 4,498,013, Cl. 250-578.000.

Kurosawa, Kei, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device by controlling thickness of insulating film at peripheral portion of element formation region. 4,497,108, Cl. 29-576.00W.

Kurosawa, Tadashi, to Tensho Electric Industrial Co., Ltd. Foot bath. 4,497,313, Cl. 128-24.100.

Kurtz, Earl F. Gunpowder substituted composition and method. 4,497,676, Cl. 149-2.000.

Kurylko, George, to MKT Geotechnical Systems. Interchangeable ram diesel pile. 4,497,376, Cl. 173-1.000.

Kustu, Sydney G.: *See*—
Ames, Giovanna F.; and Kustu, Sydney G., 4,497,730, Cl. 260-112.00R.

Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, to SMS Schloemann-Siemag Aktiengesellschaft. Gripping head of an hydraulic sheet stretcher. 4,497,193, Cl. 72-302.000.

Kuwahara, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha. Constant current source circuit. 4,498,041, Cl. 323-316.000.

Kwitkowski, Peter A.; and Pacholok, David R., to Motorola, Inc. Signal amplifier and integral signal shunt attenuator. 4,498,056, Cl. 330-296.000.

Kwun, Hegeon; and Teller, Cecil M., II, to Southwest Research Institute. Nondestructive testing of stress in a ferromagnetic structural material utilizing magnetically induced velocity change measurements. 4,497,209, Cl. 73-601.000.

Kyushu Refractories Co., Ltd.: *See*—
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.

Labelle, Edward J. Implement holder. 4,497,412, Cl. 211-60.00T.

Labelle, Henri M. R., to Martinray Industries Ltd. Sectional folding closure. 4,497,357, Cl. 160-199.000.

Laboratorie Roger Bellon: *See*—
Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, 4,497,816, Cl. 514-300.000.

Laemmermann, Fritz; Rindfleisch, Werner; Fabian, Wolfgang; and Polster, Rudolf, to BASF Aktiengesellschaft. Procedure and apparatus for charging and emptying the drying trays in a drying box. 4,497,120, Cl. 34-15.000.

Laitram Corporation, The: *See*—
Lapeyre, James M., 4,497,551, Cl. 354-67.000.

Lambert, Teresa C. Appetite suppressant. 4,497,798, Cl. 424-153.000.

Lancaster, Patrick R., III, to Lantech, Inc. Friction drive stretch wrapping apparatus. 4,497,159, Cl. 53-556.000.

Landsness, Clifford A.; and Buehrle, Thomas M., to B. F. Goodrich Company, The. Mat testing apparatus. 4,498,042, Cl. 324-54.000.

Lane, Thomas A.; Rosen, Murray; and Quinn, Maxie E. Marine antifouling coating composition. 4,497,852, Cl. 427-287.000.

Langer, Uwe; and Brettbacher, Franz, to Voest-Alpine Aktiengesellschaft. Plant and process for hot-rolling strip or plate stock. 4,497,191, Cl. 72-202.000.

Lantech, Inc.: *See*—
Lancaster, Patrick R., III, 4,497,159, Cl. 53-556.000.

Lapeyre, James M., to Laitram Corporation, The. Method and system of aerial surveying. 4,497,551, Cl. 354-67.000.

Larson, Brian R., to Sperry Corporation. M Out of N code checker circuit. 4,498,177, Cl. 371-52.000.

Larson, Dalmon M.; and Reyes, Jorge, to Mead Johnson & Company. Stable liquid diet composition. 4,497,800, Cl. 514-2.000.

Larson, Kenneth E. Duct finishing machine. 4,497,189, Cl. 72-51.000.

LaSpisa, Ronald J.; and Likins, Merle R., Jr., to Phillips Petroleum Company. Boiler control. 4,497,283, Cl. 122-451.100.

Lassig, Arndt: *See*—
Grosskreuz, Gerhard; and Lassig, Arndt, 4,497,155, Cl. 53-331.500.

Latreille, Maurice G.: *See*—
Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., 4,497,621, Cl. 425-145.000.

Laughman, Lanny M.: *See*—
Wayne, Robert J.; Laughman, Lanny M.; Mongeon, Robert J.; and Chenausky, Peter P., 4,498,179, Cl. 372-27.000.

Laurent, Paul: *See*—
Dupont, Andre ; and Laurent, Paul, 4,497,858, Cl. 428-44.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate with maleimide. 4,497,939, Cl. 526-262.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate. 4,497,940, Cl. 526-262.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate with maleimide. 4,497,948, Cl. 528-342.000.

Lawless, Jacques. Detector of the flowing of a fluid in a pipe and energy saving device for a hot water system using this detector. 4,497,434, Cl. 236-23.000.

Lawson, John E., to Armco Inc. Self-levelling underwater structure. 4,497,592, Cl. 405-202.000.

Lay, Khin M.; and Palguta, Stephen E., to HITCO. Fill yarn removal apparatus. 4,497,098, Cl. 28-171.000.

Lazarev, Anatoly A.: *See*—
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Leandri, Jacqueline: *See*—
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,497,074, Cl. 3-1.000.

Lebensfeld, Steven A. Record players. 4,498,164, Cl. 369-177.000.

Lechat, Jacques B.: *See*—
Aliani, Giorgio; Lechat, Jacques B.; and Smits, Jozef A. F., 4,497,941, Cl. 526-331.000.

Lederman, Frederick E., to General Motors Corporation. Modular suspension strut bearing. 4,497,523, Cl. 384-613.000.

Ledjeff, Konstantin: *See*—
Kraft, Helmut; and Ledjeff, Konstantin, 4,497,880, Cl. 429-86.000.

Lee, Denny L. Y.; and Hay, Robert D., to Du Pont de Nemours, E. I., and Company. NMR Imaging apparatus. 4,498,048, Cl. 324-307.000.

Lee, Gordon J.: *See*—
Cheadle, Brian E.; and Lee, Gordon J., 4,497,364, Cl. 165-134.00R.

Lee, Nam J.: *See*—
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., 4,497,952, Cl. 544-344.000.

Lee, Robert: *See*—
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, 4,497,104, Cl. 29-419.00R.

Lee, Shy-Fuh, to Zoecon Corporation. Substituted phenoxyalkanetriones. 4,497,965, Cl. 568-325.000.

Lees, Jeremy J. Flow conversion device and method. 4,497,345, Cl. 138-39.000.

LeGresley, Barry P., to AEL Microtel Limited. Parallel cyclic redundancy checking circuit. 4,498,174, Cl. 371-37.000.

Lehman, Lawrence A., to Ultra Harvesters, Inc. Ground cotton retriever with dual cleaning means. 4,497,088, Cl. 19-202.000.

Lehman, R. Danford, Jr.; and Williams, Michael F. Game with shields for deflecting hurled projectile. 4,497,492, Cl. 273-411.000.

Lekebush, Ronald C.: *See*—
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., 4,498,027, Cl. 313-634.000.

Leroy, Maurice: *See*—
Caussignac, Jean-Marie; and Leroy, Maurice, 4,497,576, Cl. 356-335.000.

Les Cables de Lyon: *See*—
Bourget, Jean-Claude, 4,497,474, Cl. 266-81.000.

Leslie Hartridge Limited: *See*—
Allen, Ralph; Moore, David A.; and Quinton, Edward F., 4,497,201, Cl. 73-119.00A.

L'Etat Francais: *See*—
Caussignac, Jean-Marie; and Leroy, Maurice, 4,497,576, Cl. 356-335.000.

Levatter, Jeffrey I., to Katz, Bernard B. High repetition rate, uniform volume transverse electric discharger laser with pulse triggered multi-arc channel switching. 4,498,183, Cl. 372-86.000.

Lever Brothers Company: *See*—
Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., 4,497,718, Cl. 252-8.750.
Tai, Ho T., 4,497,716, Cl. 252-8.800.

Levin, Herbert L.: *See*—
Lipman, Abby G.; and Levin, Herbert L., 4,497,582, Cl. 368-15.000.

Levings, Nelson, Jr.; Evans, Donald J., deceased; and by Evans, Stephen G., administrator. Knock-down furniture assembly. 4,497,524, Cl. 312-265.000.

Lewis, Robert M.; and Slaugh, Lynn H., to Shell Oil Company. Copper-alkali metal-ruthenium/silica catalyst for converting syngas to linear alpha-olefins. 4,497,908, Cl. 502-245.000.

Lewis, Robert T.: *See*—
Sullivan, James W.; and Lewis, Robert T., 4,497,276, Cl. 118-694.000.

Leyhe, Lutz: *See*—
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Libby, Charles J., Jr.; and Gaiman, Barry, to Automatix Incorporated. Arc welding system with vision. 4,497,996, Cl. 219-124.340.

Licentia Patent-Verwaltungs-GmbH: *See*—
Morz, Gunther; and Milcz, Wilhelm, 4,498,061, Cl. 333-21.00A.

Lichtblau, George J. Resonant tag and deactivator for use in an electronic security system. 4,498,076, Cl. 340-572.000.

Liepmann, Hans: *See*—
Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,497,740, Cl. 260-244.400.

Likins, Merle R., Jr.: *See*—
LaSpisa, Ronald J.; and Likins, Merle R., Jr., 4,497,283, Cl. 122-451.100.

Lilla, James A. Cantilevered suspension sling. 4,497,316, Cl. 128-94.000.

Lilly, A. Clifton, Jr.: *See*—
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Lin, Kou C.; and Burkhardt, Charles E., to Electric Power Research Institute, Inc. Method of and arrangement for assembling electrical coils around transformer cores. 4,497,449, Cl. 242-4.00R.

Lindeman, Hans: *See*—
Lindeman, Wolfgang; and Lindeman, Hans, 4,497,188, Cl. 72-40.000.

Lindeman, Wolfgang; and Lindeman, Hans. Process and apparatus for peeling wire. 4,497,188, Cl. 72-40.000.

Lindemann, Eckhard; and Wolfgang, Neumann, to Dr.-Ing. Rudolf Hell GmbH. Screen for reproducing continuous-tone pictures. 4,498,108, Cl. 358-283.000.

Lindholm, Leif, to Santrade Limited. Cemented carbide. 4,497,660, Cl. 75-240.000.

Lindsey, Hiram E., Jr., to MWL Tool and Supply Company. Setting tool and retrievable landing assembly. 4,497,371, Cl. 166-377.000.

Ling, Chung-Mei: *See*—
Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, 4,497,900, Cl. 436-511.000.

Lionetta, William G., Jr.: *See*—
Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., 4,497,533, Cl. 339-143.00R.

Lipman, Abby G.; and Levin, Herbert L. Planetarium alarm clock. 4,497,582, Cl. 368-15.000.

Lippolt, Paul K. Adjustable violin peg and dowel shaving device. 4,497,352, Cl. 142-48.000.

Lirman, Irving R. Semi-conductor transducer and method of making the same. 4,498,070, Cl. 338-42.000.

Liska, Daniel P.: *See*—
Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., 4,497,532, Cl. 339-112.00R.

Lister, Michael: *See*—
Gronbech, Robert W.; and Lister, Michael, 4,497,215, Cl. 74-89.150.

Litton Systems, Inc.: *See*—
Ross, William E., 4,497,545, Cl. 350-376.000.

Livigni, Russell A.: *See*—
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Agarwal, Sundar L., 4,497,748, Cl. 260-665.00R.

Lockheed Corporation: *See*—
Cronin, Michael J., 4,498,119, Cl. 361-386.000.

Lockheed Missiles & Space Company, Inc.: *See*—
Wenzel, James G.; and Trimble, Lloyd C., 4,497,342, Cl. 137-565.000.

Loctite (Ireland) Limited: *See*—
Cooke, Bernard; and Wrobel, Peter, 4,497,916, Cl. 523-176.000.

Lodge & Shipley Company, The: *See*—
Coate, William C., 4,497,410, Cl. 211-1.500.

Lofmark, Bengt G., to Telefonaktiebolaget LM Ericsson. Balancing impedance included in a fork. 4,498,018, Cl. 307-17.000.

Loftus, Frank, to Imperial Chemical Industries PLC. Process for the manufacture of cephalosporin derivatives. 4,497,949, Cl. 544-27.000.

Logsdon, Gary L.: *See*—
Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., 4,498,133, Cl. 364-200.000.

Loh, William, to Chevron Research Company. 5-O-Acyl-5-C-alkyl-3-O-arylmethyl or substituted arylmethyl-1,2-O-alkylidene-αD-gluco-pentofuranose and β-L-ido-pentofuranose herbicides. 4,497,649, Cl. 71-88.000.

Loma Linda University Medical Center: *See*—
Farley, Donald V., 4,497,349, Cl. 141-19.000.

Longberg, Leif; and Pedersen, Hakon S., to A/S Bergens Mekaniske Verksteder. Assembly on a chain sheave/chain-rope system. 4,497,471, Cl. 254-372.000.

Lonza Ltd.: *See*—
Baumann, Hansjorg W., 4,497,859, Cl. 428-71.000.

Looker, Brian E., to Glaxo Group Limited. Manufacture of antibiotics. 4,497,956, Cl. 548-194.000.

Lopez, Jose A., to Camilo Muebles, Inc. Panel connector system. 4,497,148, Cl. 52-126.300.

Louen, Hans-Richard: *See*—
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, 4,497,192, Cl. 72-203.000.

Louwenaar, David W. Solar warming hut. 4,497,145, Cl. 52-1.000.

Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company, Inc. Polyoxyethylene derivatives as antipruritic ectoparasiticide. 4,497,831, Cl. 514-717.000.

Lowery, Michael B. Ball-like wheel with sockets for axle. 4,497,521, Cl. 301-106.000.

Lowrance, William T. Protective device for a golf club. 4,497,404, Cl. 206-315.200.

Lucas Industries Public Limited Company: *See*—
Harrison, Anthony W.; and Goudie, Robert J., 4,497,505, Cl. 280-698.000.

Luck, Terry C.; and Marsden, Paul R., to Intercraft Designs Limited. Screening apparatus. 4,497,356, Cl. 160-135.000.

Lucke, Hans-Hermann; and Jessen, Jens-Christian, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,497,879, Cl. 429-62.000.

Luigi Stoppani S.p.A.: *See*—
Ghelli, Giovanni; and Barbon, Alessandro, 4,497,634, Cl. 8-94.260.

Lummus Industries, Inc.: *See*—
Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., 4,497,085, Cl. 19-80.00R.

Lundberg, Robert D.; Peiffer, Dennis G.; Duvdevani, Ilan; and Phillips, Robert R., to Exxon Research & Engineering Co. Shear thickening of organic diluents via interpolymer complexes. 4,497,923, Cl. 524-107.000.

Lundstrom, Bo: *See*—
Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, 4,497,392, Cl. 188-59.000.

Lundstrom, Lennart. Power control device for a double-acting multi-cylinder hot gas engine. 4,497,174, Cl. 60-521.000.

Lunt, David M.: *See*—
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., 4,497,275, Cl. 118-268.000.

Lynch, Donald M.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,497,831, Cl. 514-717.000.

Lyons, Steven A.: *See*—
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.

Machida Endoscope Company Limited: *See*—
Kobayashi, Hiroshi; and Machida, Haruhiko, 4,497,144, Cl. 51-284.00R.

Machida, Haruhiko: *See*—
Kobayashi, Hiroshi; and Machida, Haruhiko, 4,497,144, Cl. 51-284.00R.

Macho Products, Inc.: *See*—
Cho, Soo S., 4,497,070, Cl. 2-22.000.

MacKay, Andrew D.: *See*—
Carrington, Donald P.; and MacKay, Andrew D., 4,497,229, Cl. 83-76.000.

Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, to AT&T Bell Laboratories. Continuous wave sper laser. 4,498,182, Cl. 372-62.000.

Macosko, Robert L. Baseball pitching target. 4,497,485, Cl. 273-26.00A.

Macrander, Max S.: *See*—
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,498,059, Cl. 331-1.00A.

Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, to Gerhard Collardin GmbH. Phosphating process for zinc-plated metals. 4,497,668, Cl. 148-6.15Z.

Maeda, Osamu: *See*—
Nakagawa, Koichi; Maeda, Osamu; and Yamakawa, Shinzo, 4,497,759, Cl. 264-26.000.

Maier, Ludwig: *See*—
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.

Mailliet, Pierre; and Kraemer, Edgar, to Paul Wurth S.A. Modular pivotal fluidic joint systems and components thereof. 4,497,379, Cl. 173-39.000.

Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Switched capacitor filter having a reduced capacitance. 4,498,063, Cl. 333-173.000.

Makarewicz, Stanley R.: *See*—
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,498,095, Cl. 357-23.000.

Makino, Daisuke: *See*—
Sato, Hidetaka; Uchimura, Shunichiro; Uchigasaki, Isao; and Makino, Daisuke, 4,497,922, Cl. 524-104.000.

Malhotra, Sudarshan K., to Dow Chemical Company, The. Diphenoxymethylpyridine herbicides. 4,497,652, Cl. 71-94.000.

Malinovsky, Evgeny J., to Moskovskoe Nauchno-Proizvodstvennoe Objedinenie Po Stroitelnomu I Dorozhnomu Mashinostroeniju. Apparatus for designing three-dimensional structures. 4,498,139, Cl. 364-518.000.

Mallinckrodt, Inc.: *See*—
Fawzi, Mahdi B., 4,497,744, Cl. 260-429.700.

Mallion, Andrew J.: *See*—
Windsor, Harry M.; and Mallion, Andrew J., 4,497,397, Cl. 192-0.076.

Malueg, Richard M. Stabilization system for soft-mounted platform. 4,498,038, Cl. 318-648.000.

Mamei, Masayuki: *See*—
Yoshino, Tadashi; and Mamei, Masayuki, 4,497,459, Cl. 242-186.000.

Mandell, John F.: *See*—
Agrawal, Purushottam D.; and Mandell, John F., 4,497,855, Cl. 428-35.000.

Mannesmann, Gerda: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Mannesmann Rexroth GmbH: *See*—
Mucheyer, Norbert; and Schmidt, Hubertus, 4,497,375, Cl. 172-10.000.

Manzone, Richard R., to Hoyt Manufacturing Corporation. Distillation. 4,497,690, Cl. 202-181.000.

Mardanov, Valentin P.: *See*—
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Maresca, Louis M.: *See*—
Robeson, Lloyd M.; Harris, James E.; and Maresca, Louis M., 4,497,924, Cl. 524-151.000.

Marfatia, Anil: *See*—
Mommsen, Gordon V.; and Marfatia, Anil, 4,497,447, Cl. 239-691.000.

Mariani, Beniamino: *See*—
Dotti, Enrico; and Mariani, Beniamino, 4,497,164, Cl. 57-6.000.

Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Preparation of 2-chloro-5-trichloromethyl pyridine from lower chlorinated beta-picolines. 4,497,955, Cl. 546-345.000.

Marine Construction & Design Co.: *See*—
Anderson, Joseph W.; 4,497,707, Cl. 210-136.000.

Marino, Michael J.: *See*—
Paull, Seymour; and Marino, Michael J., 4,497,585, Cl. 374-158.000.

Maris, Wiltjie; and Moran, Robert, to Blanrima Pty. Ltd. Disc film developer. 4,497,559, Cl. 354-316.000.

Markert, Juergen: *See*—
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Markus, Gerardus A., to BS&B Engineering Company Inc. Heater. 4,497,281, Cl. 122-248.000.

Marquardt, Robert F.; Pederson, Harold T., Jr.; and Francis, Leo H., to Dairy Technology Ltd. Modified whey product and process including ultrafiltration and demineralization. 4,497,836, Cl. 426-239.000.
Marsden, Paul R.: *See*—
Luck, Terry C.; and Marsden, Paul R., 4,497,356, Cl. 160-135.000.
Marsh, Walter H. W.: *See*—
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,497,267, Cl. 112-158.00A.
Marshall, Cary S.; and Troyer, Scott D., to Dow Chemical Company, The. Electrolytic preparation of 3,6-dichloropicolinic acid. 4,497,697, Cl. 204-73.00R.
Marshall, Robert T.: *See*—
Anderson, Maynard E.; Marshall, Robert T.; and Hulse, Mark M., 4,497,898, Cl. 436-23.000.
Marshall and Williams Company: *See*—
Richter, Hans H., 4,497,096, Cl. 26-74.000.
Martin, Henry, to Ciba-Geigy Corporation. Compositions, which promote plant growth and protect plants based on oxide ethers and oxime esters. 4,497,745, Cl. 260-465.00D.
Martin, Lincoln A.; and Fenley, William F., Jr., to Geophysical Systems Corporation. Method of determining weathering corrections in seismic operations. 4,498,157, Cl. 367-50.000.
Martin, Peter: *See*—
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.
Martin, Robert G.: *See*—
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.
Martin, Wayne A.; and Modic, Justin G., to United States Steel Corporation. Method and apparatus for performing multiple closed and semi-closed operations on an open die press. 4,497,194, Cl. 72-356.000.
Martinez, Maria N., to AT&T Bell Laboratories. Management of defects in storage media. 4,498,146, Cl. 364-900.000.
Martinray Industries Ltd.: *See*—
Labelle, Henri M. R., 4,497,357, Cl. 160-199.000.
Maruyama, Akira: *See*—
Hatano, Takashi; and Maruyama, Akira, 4,497,878, Cl. 428-698.000.
Maruyama, Kimiomi; and Nakajima, Yasuo, to Nissan Motor Company, Limited. Fuel supply system for an internal combustion engine. 4,497,300, Cl. 123-463.000.
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, to Kabushiki Kaisha Komatsu Seisakusho. Engine speed control system for a hydro-mechanical transmission. 4,497,223, Cl. 74-866.000.
Maruyama, Toshio: *See*—
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, 4,497,140, Cl. 51-101.00R.
Mas, Michel C.: *See*—
Brisset, Guy C. S.; and Mas, Michel C., 4,497,743, Cl. 260-429.00R.
Maschinenbau Oppenweiler GmbH: *See*—
Nothdurft, Edgar, 4,497,480, Cl. 270-58.000.
Maschinenfabrik Schweiter AG: *See*—
Vollm, Ernst B., 4,497,165, Cl. 57-22.000.
Mase, Toshiyasu: *See*—
Murase, Kiyoshi; Mase, Toshiyasu; and Tomioka, Kenichi, 4,497,817, Cl. 548-150.000.
Mase, Yasushi: *See*—
Nakajima, Masataka; and Mase, Yasushi, 4,497,296, Cl. 123-440.000.
Mason, Harry N. Earring with pendant and circumjacent spiral portion. 4,497,186, Cl. 63-13.000.
Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, to Sip - Societa Italiana Per L'Esercizio Telefonico p.A. Waveguide structure for separating microwaves with mutually orthogonal planes of polarization. 4,498,062, Cl. 333-135.000.
Masuda, Shoji, to Honda Giken Kogyo Kabushiki Kaisha. Intake system for internal combustion engines. 4,497,286, Cl. 123-52.00M.
Masuda, Yoshihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control valve of exhaust gas recirculation apparatus. 4,497,335, Cl. 137-244.000.
Matec, Inc.: *See*—
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., 4,497,208, Cl. 73-584.000.
Matson, Wayne R., to ESA, Inc. Liquid chromatography. 4,497,199, Cl. 73-61.10C.
Matsuda, Kenichi: *See*—
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.
Matsuda, Tsutomu: *See*—
Watanabe, Nobuyoshi; and Matsuda, Tsutomu, 4,497,887, Cl. 430-138.000.
Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, to Dainippon Pharmaceutical Co., Ltd.; and Laboratorie Roger Bellon. 7-(4-Pyridyl)-1,8-naphthyridine derivatives and their antibacterial compositions. 4,497,816, Cl. 514-300.000.
Matsumoto, Shigenori: *See*—
Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, 4,498,013, Cl. 250-578.000.
Matsuo Electric Company, Ltd.: *See*—
Uemura, Toshihiko, 4,497,105, Cl. 29-570.000.
Matsushima, Kohji; Nakagawa, Yasutsugu; and Yagi, Michio, to Konishiroku Photo Industry Co., Ltd. Programmed automatic exposure control. 4,497,563, Cl. 354-429.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, 4,497,111, Cl. 29-734.000.
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,497,724, Cl. 252-70.000.
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.
Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, 4,498,013, Cl. 250-578.000.
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Uya, Masaru, 4,498,021, Cl. 307-443.000.
Yoshimura, Susumu; and Murakami, Mutsuaki, 4,497,728, Cl. 252-514.000.
Yoshino, Tadashi; and Mamei, Masayuki, 4,497,459, Cl. 242-186.000.
Matsushita Electric Works, Ltd.: *See*—
Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, 4,497,323, Cl. 128-685.000.
Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, 4,498,065, Cl. 335-79.000.
Matsuura, Masaaki: *See*—
Nakano, Yoshikatsu; Matsuura, Masaaki; and Akiyama, Minoru, 4,497,288, Cl. 123-52.00M.
Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, to Matsushita Electric Works, Ltd. Exhaust valve having a constant bleed rate. 4,497,323, Cl. 128-685.000.
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, to Konishiroku Photo Industry Co., Ltd. Method for preparing silver halide photographic emulsion. 4,497,895, Cl. 430-569.000.
Mattei, Riccardo, to G. D Societa' per Azioni. Device for sharpening rotating blades. 4,497,143, Cl. 51-248.000.
Mattz, Donald P.: *See*—
Varga, Stephen I.; and Mattz, Donald P., 4,497,919, Cl. 524-10.000.
Matumura, Akira: *See*—
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.
Mayer, William; and Runions, Alton E., to Stewart-Warner Corporation. Dual halogen lamp assembly. 4,498,124, Cl. 362-211.000.
Mazda Motor Corporation: *See*—
Nagaoka, Mitsuru; and Yasuno, Mitsuo, 4,497,222, Cl. 74-866.000.
McCandless, Thomas J.: *See*—
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,497,765, Cl. 264-268.000.
McCarthy, Christopher I.: *See*—
Paar, Michael S.; and McCarthy, Christopher I., 4,497,307, Cl. 123-90.330.
McCarthy, Karen; and Prochaska, Charles R., to Boeing Company, The. Locking device. 4,497,602, Cl. 410-69.000.
McCaskill, Emmett S., to Polaroid Corporation. Benzotriazine compounds. 4,497,950, Cl. 544-183.000.
McColl, Frederick A.: *See*—
Sewell, John S.; McColl, Frederick A.; and Petkoff, Peter M., 4,497,332, Cl. 137-15.000.
McDermott Incorporated: *See*—
Fern, Derek T., 4,497,594, Cl. 405-217.000.
McElrath, Kenneth O.: *See*—
Weinberg, Harold N.; Rebick, Charles; and McElrath, Kenneth O., 4,497,705, Cl. 208-127.000.
McFiggans, Robert B.: *See*—
Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., 4,498,187, Cl. 375-117.000.
McGee, Joseph A.: *See*—
Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., 4,497,532, Cl. 339-112.00R.
McGhee, James: *See*—
Dickinson, Ben W. O., III; Dickinson, Robert W.; Odgers, Irving L.; and McGhee, James, 4,497,381, Cl. 175-61.000.
McGraw-Edison Company: *See*—
Gaia, Aldino J., 4,498,068, Cl. 337-293.000.
McHenry, Kenneth A.: *See*—
Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., 4,497,197, Cl. 72-453.170.
McHugh, Edward L. Protective book cover. 4,497,508, Cl. 281-34.000.
McIntosh, John S.: *See*—
Meyer, Bruce E.; and McIntosh, John S., 4,497,134, Cl. 49-91.000.
McLaughlin, Robert C.: *See*—
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,498,059, Cl. 331-1.00A.
McMillan, Lavar C.: *See*—
Wudel, John A.; and McMillan, Lavar C., 4,497,841, Cl. 426-565.000.
McMullen, John W.; Wheeler, Michael G.; Cullingford, Hatice S.; and Sherman, Robert H., to United States of America, Energy. Apparatus for storing hydrogen isotopes. 4,497,775, Cl. 422-159.000.
Mead Johnson & Company: *See*—
Larson, Dalmon M.; and Reyes, Jorge, 4,497,800, Cl. 514-2.000.
Med-Tech Micrographics, Inc.: *See*—
Beachem, Ronald G., 4,497,572, Cl. 355-45.000.
Medical Laboratory Automation, Inc.: *See*—
Scordato, Richard E., 4,497,774, Cl. 422-73.000.

Meguro, Hiroshi; Okubo, Yuji; and Watanabe, Sakuji, to Nippon Kogaku K.K. Exposure mode setting device in an exposure control apparatus of a camera. 4,497,564, Cl. 354-442.000.

Mehesch, Hans: *See*—
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,497,595, Cl. 405-261.000.

Meier, Eugen, to Mettler Instrumente AG. Weighing apparatus including improved force-transmitting lever means. 4,497,386, Cl. 177-229.000.

Meister, Winfried, to Meister, Winfried. Method and apparatus for the production of jointing bands with embedded reinforcing profiles which run at right angles to the longitudinal axis of the band. 4,497,762, Cl. 264-172.000.

Meldrum, Ian G.: *See*—
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.

Melnor Industries, Inc.: *See*—
Chow, Ho, 4,497,441, Cl. 239-230.000.

Melys, Aleksandras A., to Sweda International, Inc. Keyboard spacer. 4,497,987, Cl. 200-42.00R.

Melzer, Milena: *See*—
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.

Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, to Otis Elevator Company. Modular operational elevator control system. 4,497,391, Cl. 187-29.00R.

Mennicke, Winfried, to Bayer Aktiengesellschaft. Asymmetrical 1:2 chromium complexes derived from azo and azomethine dyes. 4,497,734, Cl. 534-695.000.

Menown, Hugh; Newton, Barry P.; and Neale, Christopher V., to English Electric Valve Company Limited. Laser arrangements. 4,498,181, Cl. 372-38.000.

Merck & Co., Inc.: *See*—
Hoffman, Jacob M., Jr., 4,497,810, Cl. 514-222.000.

Mercurio, Frank, to Coleco Industries, Inc. Spring action ride-on toy. 4,497,500, Cl. 280-1.130.

Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Process for the preparation of an aliphatic, cycloaliphatic, and/or aliphatic-cycloaliphatic di- and/or polyurethane. 4,497,963, Cl. 560-115.000.

Merlin Gerin: *See*—
Fiorina, Jean-Noel, 4,498,127, Cl. 363-5.000.

Merlini, Lucio; Rossi, Alessandro; and Buonamici, Metilde, to Farmitalia Carlo Erba S.p.A. Substituted iminoderivatives of dihydrobenzopyran and dihydrobenzothiopyran. 4,497,820, Cl. 514-432.000.

Mermelstein, Seymour, to Dresser Industries, Inc. Laminar flowmeter. 4,497,202, Cl. 73-202.000.

Merritt, Henry B.: *See*—
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Meschanov, Gennady I.: *See*—
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Imbiel, Herbert; and Herbig, Henning, 4,498,087, Cl. 343-915.000.

Messmer, Josef: *See*—
Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, 4,498,185, Cl. 373-93.000.

Mettler Instrumente AG: *See*—
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Meuters, Friedrich: *See*—
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, 4,497,192, Cl. 72-203.000.

Meyco Products, Inc.: *See*—
Weissner, David W., 4,497,152, Cl. 52-709.000.

Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, to Ciba-Geigy Corporation. Triazolylalkenes as fungicides and plant growth regulants. 4,497,647, Cl. 71-76.000.

Meyer, Bruce E.; and McIntosh, John S. Exterior louver and louver apparatus. 4,497,134, Cl. 49-91.000.

Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, to Bergwerksverband GmbH. Method of bonding roofbolt rods to boltholes. 4,497,595, Cl. 405-261.000.

Meyer, Gustavo A.: *See*—
Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., 4,497,779, Cl. 423-72.000.

Meyer, Helmut P.; and Isliker, Gaston R., to Bendix Corporation, The. Method of forming a tubular electrical insulator assembly. 4,497,633, Cl. 445-7.000.

Meyer, Horst: *See*—
Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, 4,497,821, Cl. 514-302.000.

Meyer, Norbert: *See*—
Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,497,819, Cl. 514-397.000.

Meyer zu Bexten, Jobst H.: *See*—
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leybe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Michalski, Dieter, to ITT Industries, Inc. Input unit. 4,497,982, Cl. 200-5.00R.

Microdot Inc.: *See*—
Repella, James A., 4,497,496, Cl. 277-134.000.

Mid America Machine Corp.: *See*—
Becker, Arnold F.; and Johnson, Harold K., 4,498,192, Cl. 383-126.000.

Mighty-Mac, Inc.: *See*—
Bell, Richard S., 4,497,071, Cl. 2-94.000.

Mikic, Frank; Fuhreck, John E.; and Pacetti, Larry D., to Snap-on Tools Corporation. Wrench holder. 4,497,405, Cl. 206-378.000.

Mikkor, Mati, to Ford Motor Company. Method of preparing an article which is resistant to corrosive attack by molten polysulfide salts. 4,497,882, Cl. 429-163.000.

Milberger, Lionel J.: *See*—
Hurta, Gary L.; Milberger, Lionel J.; and Williams, Alford M., 4,497,369, Cl. 166-368.000.

Milcz, Wilhelm: *See*—
Morz, Gunther; and Milcz, Wilhelm, 4,498,061, Cl. 333-21.00A.

Milia, Frank, to Carlisle Laboratories, Inc. Dispenser package assembly. 4,497,432, Cl. 229-17.00B.

Milkowski, Wolfgang: *See*—
Zeugner, Horst; Romer, Dietmar: Liepmann, Hans; and Milkowski, Wolfgang, 4,497,740, Cl. 260-244.400.

Millar, Colin A.: *See*—
Payne, David B.; and Millar, Colin A., 4,497,536, Cl. 350-96.210.

Millar, William G. Candle snuffer and method. 4,497,374, Cl. 169-46.000.

Miller, Herbert L., to Miller Paint Equipment, Inc. Paint shaker. 4,497,581, Cl. 366-208.000.

Miller, Jack V., to Gravity Guidance, Inc. Ankle supporting device for inverted posture. 4,497,314, Cl. 128-75.000.

Miller, Norman K. Electric mat switch. 4,497,989, Cl. 200-86.00R.

Miller Paint Equipment, Inc.: *See*—
Miller, Herbert L., 4,497,581, Cl. 366-208.000.

Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, to Atlantic Richfield Company. Corrosion inhibition. 4,497,702, Cl. 208-47.000.

Milliken Research Corporation: *See*—
Cogan, Jerry A., Jr., 4,497,863, Cl. 428-253.000.

Millington, Michael J., to Parsons Controls Limited. Chain components. 4,497,169, Cl. 59-84.000.

Milner, Ed M.; and Mykrantz, John R. Artificial cross-country ski surface with pair of bent over ski tracks. 4,497,854, Cl. 428-17.000.

Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, to Toray Industries, Inc. Polyethylene terephthalate film, process for the production thereof and magnetic recording medium therefrom. 4,497,865, Cl. 428-336.000.

Minami, Toshiaki: *See*—
Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, 4,498,091, Cl. 346-216.000.

Mine, Mamoru: *See*—
Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, 4,497,235, Cl. 84-1.190.

Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, to Teijin Limited. Apparatus for preparing a suede-like raised woven or knitted fabric. 4,497,095, Cl. 26-2.00R.

Minnesota Mining and Manufacturing Company: *See*—
Brady, Harold E., Jr., 4,497,860, Cl. 428-156.000.
Kistner, John F., 4,497,861, Cl. 428-201.000.
Sorlien, Mark D., 4,497,760, Cl. 264-36.000.

Minolta Camera Kabushiki Kaisha: *See*—
Ishida, Tokuji, 4,497,562, Cl. 354-416.000.

Minowa, Yoshibumi: *See*—
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Miotto, Mirella: *See*—
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,497,741, Cl. 260-245.770.

Mitchell, Gordon L.; and Tressler, John H., III, to Honeywell Inc. Optical imaging device and method. 4,497,544, Cl. 350-353.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Daimon, Masahiro, 4,498,159, Cl. 369-44.000.
Fujita, Jiro; and Yamane, Iwao, 4,497,266, Cl. 112-121.110.
Fukushima, Nobuo; and Tomimatsu, Noriyuki, 4,498,081, Cl. 340-793.000.
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, 4,497,240, Cl. 98-2.010.
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, 4,497,695, Cl. 204-28.000.
Wada, Shunichi, 4,497,203, Cl. 73-204.000.
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.

Mitsubishi Mining & Cement Co., Ltd.: *See*—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.

Mitsubishi Paper Mills, Ltd.: *See*—
Itoh, Akira; and Takemura, Akira, 4,497,894, Cl. 430-522.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.

Mitsui, Yoshiaki: *See*—
Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, 4,497,095, Cl. 26-2.00R.
Mittelmann, Gerhard, to Swiss Aluminium Ltd. Container, in particular for transporting freight by air. 4,497,525, Cl. 312-321.000.
Mitter, Mathias. Arrangement for preventing screen deformation. 4,497,249, Cl. 101-120.000.
Mitter, Mathias. Apparatus for uniform application of liquid treating media to workpiece webs. 4,497,273, Cl. 118-50.000.
Miura, Kenzo: *See*—
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Miyake, Yukio: *See*—
Ebata, Mitsuo; Miyake, Yukio; and Kawamura, Yoshimi, 4,497,797, Cl. 424-118.000.
Miyakoshi, Shinichi; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Anti-lifting mechanism for motor vehicles. 4,497,506, Cl. 280-703.000.
Mizuhara, Howard, to GTE Products Corporation. Reactive metal-palladium-copper-nickel brazing alloys. 4,497,772, Cl. 420-457.000.
MKT Geotechnical Systems: *See*—
Kurylko, George, 4,497,376, Cl. 173-1.000.
Mobay Chemical Corporation: *See*—
Sanderson, John R.; and Krishnan, Sivaram, 4,497,947, Cl. 528-174.000.
Mobil Oil Corporation: *See*—
Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., 4,497,786, Cl. 423-329.000.
Murray, James G., 4,497,883, Cl. 429-194.000.
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,497,968, Cl. 585-304.000.
Mobius, Ulrich. Carrier arrangement. 4,497,425, Cl. 224-324.000.
Modic, Justin G.: *See*—
Martin, Wayne A.; and Modic, Justin G., 4,497,194, Cl. 72-356.000.
Modica, Frank S.: *See*—
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,497,902, Cl. 502-65.000.
Mohan Rao, G. R., to Texas Instruments Incorporated. Semiconductor integrated circuit memory device with both serial and random access arrays. 4,498,155, Cl. 365-189.000.
Molins PLC: *See*—
Furze, Victor J.; and Howlett, Thomas J., 4,497,482, Cl. 271-94.000.
Moller, Hermann: *See*—
Gmeiner, Gunter; Moller, Hermann; Andres, Rudolf; and Faust, Eberhard, 4,497,517, Cl. 297-231.000.
Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, to Fujitsu Limited. Semiconductor device and a method of manufacturing the same. 4,497,106, Cl. 29-571.000.
Mommsen, Gordon V.; and Marfatia, Anil, to Graco, Inc. Energy damping device for spray gun. 4,497,447, Cl. 239-691.000.
Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, to Kabushiki Kaisha Daini Seikosha. Electronic musical instrument. 4,497,235, Cl. 84-1.190.
Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,497,682, Cl. 156-384.000.
Moncelle, Michael E.: *See*—
Earleson, Walter E.; King, Dennis M.; and Moncelle, Michael E., 4,498,016, Cl. 290-40.00R.
Mongeon, Robert J.: *See*—
Wayne, Robert J.; Laughman, Lanny M.; Mongeon, Robert J.; and Chenausky, Peter P., 4,498,179, Cl. 372-27.000.
Monnet, Bernard, to Pont-A-Mousson S.A. Method for injection moulding coated parts from plastics material. 4,497,763, Cl. 264-255.000.
Monsanto Company: *See*—
Agrawal, Purushottam D.; and Mandell, John F., 4,497,855, Cl. 428-35.000.
Monti, Carmel S.: *See*—
Yurdin, Carl; and Monti, Carmel S., 4,497,549, Cl. 350-581.000.
Moore, David A.: *See*—
Allen, Ralph; Moore, David A.; and Quinton, Edward F., 4,497,201, Cl. 73-119.00A.
Moore, Gary L.: *See*—
Kontz, Robert F.; and Moore, Gary L., 4,497,681, Cl. 156-363.000.
Moore, Prentice G., to Square D Company. Electronic watt/var transducer. 4,498,138, Cl. 364-483.000.
Moore, William T.; and Albright, John W. Therapeutic method to reduce pain and inflammation. 4,497,823, Cl. 514-512.000.
Mooz, Elizabeth D.: *See*—
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.
Moran, Robert: *See*—
Maris, Wiltjie; and Moran, Robert, 4,497,559, Cl. 354-316.000.
Moretti, Antonio; and Banon, Louis, to Regie Nationale des Usines Renault. Synchronous electrodynamic machine with permanent magnets and cooled by a liquid. 4,498,024, Cl. 310-54.000.
Moretto, Hans-Heinrich: *See*—
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.
Morgan Construction Company: *See*—
Woodrow, Harold E., 4,497,190, Cl. 72-133.000.
Morgan, John D.: *See*—
Giolma, William H.; and Morgan, John D., 4,498,020, Cl. 307-261.000.
Morgan, Thomas W.: *See*—
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,497,567, Cl. 355-3.0TR.
Mori, Kashichi, to Kowa Shoji Kabushiki Kaisha. Pineapple cutter. 4,497,245, Cl. 99-542.000.
Mori, Nobuhiko, to Nippon Electric Co., Ltd. Comparator suitable for a character recognition system. 4,498,189, Cl. 382-30.000.
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, to Teijin Limited. Method for treating metallic or ceramic surfaces at high temperatures. 4,497,720, Cl. 252-52.00A.
Morihashi, Toshifumi: *See*—
Nakahara, Teiji; and Morihashi, Toshifumi, 4,497,167, Cl. 57-328.000.
Morikawa, Teruo: *See*—
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, 4,497,573, Cl. 355-58.000.
Morishita, Akira: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.
Morita, Hideo: *See*—
Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.
Morita, Yoshinori; and Ohmura, Yutaka, to Nissan Motor Company, Limited. Sealing assembly for automotive front-pillar and side-door arrangement. 4,497,516, Cl. 296-206.000.
Moriya, Masaichi; and Seko, Osamu, to Nissan Motor Company, Limited; and Ohi Seisakusho Co., Ltd. Inside-handle arrangement for an automotive vehicle door assembly. 4,497,514, Cl. 292-336.300.
Moriyama, Masaru, to Victor Company of Japan, Limited. A/D Converter having a self-bias circuit. 4,498,072, Cl. 340-347.0AD.
Morlock, Roland: *See*—
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Morran, James R.: *See*—
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Morris, Roy E. Child proof seat belt. 4,497,094, Cl. 24-633.000.
Morton Glass Works: *See*—
Abel, Donald, 4,497,477, Cl. 269-303.000.
Morz, Gunther; and Milcz, Wilhelm, to Licentia Patent-Verwaltungs-GmbH. Microwave receiving device. 4,498,061, Cl. 333-21.00A.
Mosbrucker, Gregory A.; and Abelein, Dewayne M., to Precision Plumbing Products, Inc. Floor trap primer valve. 4,497,337, Cl. 137-247.250.
Moskovskoe Nauchno-Proizvodstvennoe Objedinenie Po Stroitelnomu I Dorozhnomu Mashinostroeniju: *See*—
Malinovsky, Evgeny J., 4,498,139, Cl. 364-518.000.
Moskowitz, Paul A.: *See*—
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Motorola, Inc.: *See*—
Addie, David L.; and Ellsworth, Kenneth A., 4,498,096, Cl. 357-67.000.
Dworsky, Lawrence N., 4,498,045, Cl. 324-71.500.
Helbert, John N., 4,497,890, Cl. 430-296.000.
Kwitkowski, Peter A.; and Pacholok, David R., 4,498,056, Cl. 330-296.000.
Stout, Roger P., 4,498,023, Cl. 310-14.000.
Motter Printing Press Co.: *See*—
Dressler, Frederick K., 4,497,250, Cl. 101-350.000.
Mourlevat, Jean: *See*—
Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, 4,497,510, Cl. 285-18.000.
Moyer, Robert C., to Barber-Colman Company. Ventilation control system. 4,497,242, Cl. 98-115.300.
Mucheyer, Norbert; and Schmidt, Hubertus, to Mannesmann Rexroth GmbH. Force measuring apparatus mounted on tractor including Hall sensor detecting deformation of flex rod to control tractor power hoist. 4,497,375, Cl. 172-10.000.
Mueller, Kurt; and Wirz, Armin, to Rieter Machine Works. Heatable godet and a method of heating a godet. 4,497,626, Cl. 432-9.000.
Mukoyama, Yoshiyuki: *See*—
Nishizawa, Hiroshi; and Mukoyama, Yoshiyuki, 4,497,944, Cl. 528-49.000.
Muller, Dieter: *See*—
Groth, Rolf; and Muller, Dieter, 4,497,700, Cl. 204-192.00P.
Muller, Eberhard. Method and device for erecting building structures such as bridges, using pre-fabricated concrete beams. 4,497,153, Cl. 52-745.000.
Muller, Heinz: *See*—
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, 4,497,166, Cl. 57-263.000.
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., to Excel Industries, Inc. Mower with lateral extension wings. 4,497,160, Cl. 56-6.000.
Mullritter, Ludwig: *See*—
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Multi Bar Systems Ltd.: *See*—
Negus, Terence I., 4,497,601, Cl. 408-156.000.
Multinorm, B.V.: *See*—
Vissers, Hermanus H.; and Van Staveren, Hendrikus C., 4,497,161, Cl. 56-13.600.
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Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.

Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Mundloch, James D.: *See*—
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Munter, Ernst A.; and Aczel, Andreas L., to Northern Telecom Limited. Tone source for telephone systems. 4,498,171, Cl. 370-110.200.

Murai, Yasushi: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.

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Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, 4,497,568, Cl. 355-14.00R.

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Yoshimura, Susumu; and Murakami, Mutsuaki, 4,497,728, Cl. 252-514.000.

Murase, Kiyoshi; Mase, Toshiyasu; and Tomioka, Kenichi, to Yamanouchi Pharmaceutical Co., Ltd. 2-Phenylimidazo [2,1-b]benzothiazole derivatives. 4,497,817, Cl. 548-150.000.

Murata Kikai Kabushiki Kaisha: *See*—
Nakahara, Teiji; and Morihashi, Toshifumi, 4,497,167, Cl. 57-328.000.

Murata Manufacturing Co., Ltd.: *See*—
Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, 4,498,067, Cl. 336-65.000.
Murata, Michihiro; and Kumada, Akira, 4,497,701, Cl. 204-430.000.

Murata, Michihiro; and Kumada, Akira, to Murata Manufacturing Co., Ltd. Humidity sensitive device. 4,497,701, Cl. 204-430.000.

Murayama, Fumiaki; and Handa, Shizuo, to Nippondenso Co., Ltd. Fuel injection timing device for internal combustion engines. 4,497,303, Cl. 123-501.000.

Murayama, Naohiro: *See*—
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.

Murdock, Michael J.: *See*—
Stelcher, William N.; and Murdock, Michael J., 4,497,420, Cl. 221-13.000.

Murray Corporation: *See*—
Proctor, Robert H., 4,497,090, Cl. 24-20.00R.

Murray, Francis J.: *See*—
Kuelzow, Christopher J.; Kackos, Edward M.; and Murray, Francis J., 4,497,773, Cl. 422-26.000.

Murray, James G., to Mobil Oil Corporation. Battery having cathode of sheet loaded with graphite and carbon sheet anode. 4,497,883, Cl. 429-194.000.

Murtfeldt, Robert L.: *See*—
Sullivan, Michael D.; Murtfeldt, Robert L.; and Yelsey, Arthur R., 4,497,324, Cl. 128-736.000.

Murtland, William H., to Sperry Corporation. Avionics chassis insertion/extraction mechanism. 4,497,528, Cl. 339-45.00M.

Muto, Akira: *See*—
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.

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Myers, Ronald W., to AMP Incorporated. Circuit board housing having self-contained modular jack. 4,497,526, Cl. 339-17.0LC.

Mykrantz, John R.: *See*—
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Nagai, Satoshi: *See*—
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, 4,497,210, Cl. 73-602.000.

Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, to Matsushita Electric Works, Ltd. Electromagnetic relay. 4,498,065, Cl. 335-79.000.

Nagaoka, Mitsuru; and Yasuno, Mitsuo, to Mazda Motor Corporation. Clutch control in a multiple clutch type gear transmission for automobile. 4,497,222, Cl. 74-866.000.

Nagaoka, Shinji; and Sato, Koji, to Seiko Koki Kabushiki Kaisha. Control circuit for active type range finder. 4,497,560, Cl. 354-403.000.

Nagasaka, Nobuyuki: *See*—
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Nagasaki, Tatsuo, to Olympus Optical Co. Limited. Ultrasonic detection apparatus. 4,497,322, Cl. 128-660.000.

Nagasuye, Joseph H.: *See*—
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Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Temperature control device for a vehicle cabin. 4,497,240, Cl. 98-2.010.

Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Error correcting system. 4,498,175, Cl. 371-37.000.

Nakagawa, Koichi; Maeda, Osamu; and Yamakawa, Shinzo, to Nippon Telegraph & Telephone Public Corporation. Drawing of polyoxymethylene using dielectric heating. 4,497,759, Cl. 264-26.000.

Nakagawa, Yasuhiko: *See*—
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Nakagawa, Yasutsugu: *See*—
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Nakaguchi, Osamu: *See*—
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Nakahara, Teiji; and Morihashi, Toshifumi, to Murata Kikai Kabushiki Kaisha. Method for producing spun yarns. 4,497,167, Cl. 57-328.000.

Nakahara, Toshiaki: *See*—
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.

Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, to Ube Industries, Ltd. Process for preparing optically active tryptophans. 4,497,957, Cl. 548-496.000.

Nakai, Meroji: *See*—
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.

Nakajima, Masataka; and Mase, Yasushi, to Nissan Motor Company, Limited. Electronic control system for carburetor and control method therefor. 4,497,296, Cl. 123-440.000.

Nakajima, Yasuo: *See*—
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Nakamura, Shinichi: *See*—
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Nakamura, Taku: *See*—
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Nakanishi, Nobuyasu: *See*—
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Nakanishi, Toshihiro: *See*—
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.

Nakano, Yoshikatsu; Matsuura, Masaaki; and Akiyama, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Intake device for an engine. 4,497,288, Cl. 123-52.00M.

Nakata, Issei: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.

Nakayama, Kenji: *See*—
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Nakayama, Kenjiro: *See*—
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Nalco Chemical Company: *See*—
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Naoi, Mikio: *See*—
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Napco Security Systems, Inc.: *See*—
Gaudio, Raymond, 4,498,075, Cl. 340-525.000.

Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, to Sumitomo Chemical Company, Limited; Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu. Antiparkinsonian agent. 4,497,826, Cl. 514-567.000.

Narihisa, Masaaki: *See*—
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.

National Semiconductor Corporation: *See*—
Nelson, Carl T., 4,497,586, Cl. 374-163.000.

National Steel Corporation: *See*—
Graham, Howard A., 4,497,180, Cl. 62-63.000.

NB Jackets Co.: *See*—
O'Connor, Mark, 4,497,128, Cl. 40-405.000.

NCR Corporation: *See*—
Anderson, Jeff L., 4,497,892, Cl. 430-347.000.

Neale, Christopher V.: *See*—
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NEC Corporation: *See*—
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Negus, Terence I., to Multi Bar Systems Ltd. Cutting tool. 4,497,601, Cl. 408-156.000.

Neher, Heinz: *See*—
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, 4,497,166, Cl. 57-263.000.

Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., to Lever Brothers Company. Homogeneous aqueous fabric softening composi-

tion with stilbene sulfonic acid fluorescent whitener. 4,497,718, Cl. 252-8.750.
Nellen, William J., to TMCI, Inc. Tobacco product with high filling power and process of making same. 4,497,331, Cl. 131-353.000.
Nelson, Carl T., to National Semiconductor Corporation. Celsius electronic thermometer circuit. 4,497,586, Cl. 374-163.000.
Nelson, Jeffrey N.; and Peters, Thomas A., to Fuller Company. Rotary coal feeder and dryer. 4,497,122, Cl. 34-68.000.
Nelson, Jon N., to Energy Conservation Associates Incorporated. Weather strip. 4,497,137, Cl. 49-496.000.
Nelson, Norvell J., to Psi Star, Inc. Aqueous process for etching cooper and other metals. 4,497,687, Cl. 156-659.100.
Nelson, Peter H., to Syntex (U.S.A.) Inc. Arachidonic acid analogues as anti-inflammatory and anti-allergic agents. 4,497,827, Cl. 514-381.000.
Nenkov, Nikolay D., to Komitet po Goelogica. Retractable core drill bit. 4,497,382, Cl. 175-260.000.
Neri, Carlo: *See*—
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Neundorfer, Inc.: *See*—
Neundorfer, Mark H., 4,497,282, Cl. 122-379.000.,
Neundorfer, Mark H., to Neundorfer, Inc. Apparatus for deslagging steam generator tubes. 4,497,282, Cl. 122-379.000.
Neuzil, Richard W.; and Hobbs, Simon H., to UOP Inc. Process for the separation of ethylbenzene. 4,497,972, Cl. 585-828.000.
Newman, John W.: *See*—
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Newton, Colin: *See*—
Chisholm, Donald M.; Newton, Colin; and Winchester, Stanley W., 4,497,662, Cl. 106-92.000.
Ng, Yee S., to Eastman Kodak Company. Correction of image defects in photoconductive film. 4,497,566, Cl. 355-3.0CH.
Nicholson, Charles B., to Albany International Corp. Two piece screen filter. 4,497,709, Cl. 210-489.000.
Nicholson, James E.; and Ryan, James P., to Rudolph Beaver, Inc. Surgical blade unit. 4,497,320, Cl. 128-305.000.
Nicholson, Nicholas; Dowdy, Edward J.; Holt, David M.; and Stump, Charles J., Jr., to United States of America, Energy. Portable instrument for inspecting irradiated nuclear fuel assemblies. 4,497,769, Cl. 376-257.000.
Nicoletti, Adolph E.: *See*—
Plevyak, Jerome B.; and Nicoletti, Adolph E., 4,497,488, Cl. 273-149.00R.
Nielsen, Edward M., Jr.; and Caffrey, Walter T. Heated windshield wiper. 4,497,083, Cl. 15-250.060.
Nieuweboer, Bob: *See*—
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Nihon Tokushu Noyaku Seizo K.K.: *See*—
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Niida, Taro: *See*—
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Nilsen, Carl J., to SWS Incorporated. Apparatus for continuously advancing and welding metal can bodies and the like. 4,497,995, Cl. 219-121.0LC.
Nippon Electric Co., Ltd.: *See*—
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
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Nippon Gakki Seizo Kabushiki Kaisha: *See*—
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Nippon Infrared Industries Co., Ltd.: *See*—
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Nippon Kogaku K.K.: *See*—
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Meguro, Hiroshi; Okubo, Yuji; and Watanabe, Sakuji, 4,497,564, Cl. 354-442.000.
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.
Nippon Piston Ring Co., Ltd.: *See*—
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Nippon Steel Corporation: *See*—
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Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.
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Nippon Telegraph & Telephone Public Corporation: *See*—
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
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Nippondenso Co., Ltd.: *See*—
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Nishijima, Takayoshi: *See*—
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Nishimura, Sanji: *See*—
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Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, to Nissan Motor Company, Limited; and Ikeda Bussan Co., Ltd. Adjustable seat structure for a motor vehicle. 4,497,518, Cl. 297-341.000.
Nishimura, Tadafumi: *See*—
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Nishimura, Yoshiro: *See*—
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Nishioka, Akira; Aotani, Yoshimasa; and Yamasue, Kotaro, to Fuji Photo Film Co., Ltd. Light-sensitive o-quinonediazide printing plate with oxonol dye. 4,497,888, Cl. 430-165.000.
Nishioka, Takeshi: *See*—
Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, 4,497,865, Cl. 428-336.000.
Nishizawa, Hiroshi; and Mukoyama, Yoshiyuki, to Hitachi Chemical Company, Ltd. Process for producing polyamide-imide resin. 4,497,944, Cl. 528-49.000.
Nishizawa, Shigeki: *See*—
Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.
Nissan Motor Company, Limited: *See*—
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,497,292, Cl. 123-195.00H.
Kawamoto, Tamio, 4,497,216, Cl. 74-475.000.
Kobayashi, Hiroshi, 4,497,204, Cl. 73-304.00C.
Maruyama, Kimiomi; and Nakajima, Yasuo, 4,497,300, Cl. 123-463.000.
Morita, Yoshinori; and Ohmura, Yutaka, 4,497,516, Cl. 296-206.000.
Moriya, Masaichi; and Seko, Osamu, 4,497,514, Cl. 292-336.300.
Nakajima, Masataka; and Mase, Yasushi, 4,497,296, Cl. 123-440.000.
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.
Ozawa, Masuo, 4,497,305, Cl. 123-556.000.
Nittan Company, Limited: *See*—
Sasaki, Isao, 4,498,074, Cl. 340-514.000.
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, to Mitsubishi Mining & Cement Co., Ltd. Filler for filling in defects or hollow portions of bones. 4,497,075, Cl. 3-1.900.
Nixdorf Computer AG: *See*—
Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, 4,497,588, Cl. 400-645.100.
Noe, Christian. Chiral, optically active compounds useful as protective groups for hydroxy, thiol and amino compounds. 4,497,960, Cl. 549-386.000.
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, to Toyota Jidosha Kabushiki Kaisha. Anti creep vehicle braking system allowing further additional braking action application. 4,497,395, Cl. 192-4.00A.
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, to Matsushita Electric Industrial Co., Ltd. Time divided digital signal transmission system. 4,498,170, Cl. 370-110.100.
Nordine, Clifford. Wood fired boiler. 4,497,262, Cl. 110-234.000.
Nordipa AG: *See*—
de Vroom, Hubertus M., 4,497,851, Cl. 427-147.000.
Noro, Masao, to Nippon Gakki Seizo Kabushiki Kaisha. Power amplifier with power supply switching. 4,498,057, Cl. 330-297.000.
North American Philips Corporation: *See*—
Stupp, Edward H.; and Fellows, Mark W., 4,498,031, Cl. 315-307.000.
Northern Telecom Limited: *See*—
DeBortoli, George, 4,497,411, Cl. 211-26.000.
Munter, Ernst A.; and Aczel, Andreas L., 4,498,171, Cl. 370-110.200.
Norton Christensen, Inc.: *See*—
Jurgens, Reiner, 4,497,224, Cl. 81-57.340.
Norton Company: *See*—
Ostertag, Alfred, 4,497,383, Cl. 175-289.000.
Nothdurft, Edgar, to Maschinenbau Oppenweiler GmbH. Ejector mechanism for incomplete fascicles in a conveyor line. 4,497,480, Cl. 270-58.000.
Novasina AG: *See*—
Horn, Petr, 4,498,044, Cl. 324-65.00R.
Novo Industri A/S: *See*—
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,497,897, Cl. 435-188.000.
Novus Inc.: *See*—
Wiele, Robert W., 4,497,476, Cl. 269-1.000.

Nozaki, Kenzie, to Shell Oil Company. Olefin polymerization catalyst compositions and polymerization process. 4,497,905, Cl. 502-107.000.
Nozaki, Takashi: *See*—
Sakurai, Kunio; Ito, Hiroshi; and Nozaki, Takashi, 4,497,539, Cl. 350-164.000.
NRG Systems, Inc.: *See*—
Funke, Craig D., 4,497,310, Cl. 126-292.000.
Nucor Corporation: *See*—
Simpson, Harold G.; and Hollman, Bert D., 4,497,151, Cl. 52-520.000.
Nunlist, Erwin J., to Kennecott Corporation. Repair plug assembly for vessel having a corrosion resistant lining. 4,497,418, Cl. 220-234.000.
Nussbaum, Joel H., to Standard Products Company, The. Method of making a laminate construction. 4,497,678, Cl. 156-244.110.
O/Y KYRO A/B Tamglass: *See*—
Peltonen, Esko J., 4,497,645, Cl. 65-107.000.
Oba, Ryohei: *See*—
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.
Oce-Nederland B.V.: *See*—
Rutten, Hendrik G. J., 4,497,565, Cl. 355-3.00R.
O'Connor, James M.: *See*—
Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., 4,497,913, Cl. 521-137.000.
O'Connor, Mark, to NB Jackets Co. Single-channel microfiche master. 4,497,128, Cl. 40-405.000.
Odahara, Tetsuichi: *See*—
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.
O'Dell, James L. Cigarette snuffer. 4,497,329, Cl. 131-235.00R.
Odgers, Irving L.: *See*—
Dickinson, Ben W. O., III; Dickinson, Robert W.; Odgers, Irving L.; and McGhee, James, 4,497,381, Cl. 175-61.000.
Oehy, Peter, to Rieter Machine Works. Apparatus for cutting a fiber sliver. 4,497,087, Cl. 19-159.00A.
Ogasawara, Tomio: *See*—
Ozaki, Shoichiro; Hoshiko, Tomonori; and Ogasawara, Tomio, 4,497,815, Cl. 517-274.000.
Ogawa, Naoki: *See*—
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,497,292, Cl. 123-195.00H.
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, to Nippon Kogaku K.K. Dental implant and method of making same. 4,497,629, Cl. 433-201.000.
Ogman, Abraham, to Paul Revere Corporation, The. Apparatus to slice a large round bale. 4,497,163, Cl. 56-341.000.
Ogura, Ken; Yamada, Nobuhiko; and Ohmi, Hiroshi, to Nippondenso Co., Ltd. Method for plating an article and the apparatus therefor. 4,497,693, Cl. 204-15.000.
O'Hara, Mark J.; and Johnson, Russell W., to UOP Inc. Hydrocarbon conversion process. 4,497,704, Cl. 208-112.000.
Ohashi, Ken: *See*—
Tawara, Yoshio; and Ohashi, Ken, 4,497,672, Cl. 148-102.000.
Ohhashi, Masahide, to Tokyo Shibaura Denki Kabushiki Kaisha. Data error correction circuit. 4,498,178, Cl. 371-37.900.
Ohi Seisakusho Co., Ltd.: *See*—
Moriya, Masaichi; and Seko, Osamu, 4,497,514, Cl. 292-336.300.
Ohio & Pennsylvania Fuels Co, Ltd.: *See*—
Valenti, Nicholas, 4,497,661, Cl. 75-256.000.
Ohkata, Ichizo, to Katou Hatsujo Kaisha Ltd. Device for automatically adjusting angle of louver. 4,497,241, Cl. 98-40.250.
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, to BASF Aktiengesellschaft. Preparation of acicular, ferrimagnetic iron oxides. 4,497,723, Cl. 252-62.560.
Ohmi, Hiroshi: *See*—
Ogura, Ken; Yamada, Nobuhiko; and Ohmi, Hiroshi, 4,497,693, Cl. 204-15.000.
Ohmura, Yutaka: *See*—
Morita, Yoshinori; and Ohmura, Yutaka, 4,497,516, Cl. 296-206.000.
Ohno, John M., to General Electric Company. Silicon carbide cutting insert with pre-pressed core center piece and sintered diamond envelope. 4,497,639, Cl. 51-307.000.
Ohsaki, Ichiro: *See*—
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.
Ohshima, Tokio: *See*—
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
Ohta, Jun: *See*—
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, to Nippon Steel Corporation; and Kyushu Refractories Co., Ltd. Forsterite-carbon refractory. 4,497,901, Cl. 501-90.000.
Ohzawa, Yoshiyuki: *See*—
Sanada, Sakae; and Ohzawa, Yoshiyuki, 4,497,677, Cl. 156-89.000.
Oime, Inc.: *See*—
Frink, Shelby T., 4,497,614, Cl. 417-238.000.
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., to Matec, Inc. Measurement of electro-kinetic properties of a solution. 4,497,208, Cl. 73-584.000.
Ojanen, Randall W., to GTE Products Corporation. Rotatable cutting bit. 4,497,520, Cl. 299-86.000.
Ojima, Iwao; and Hirai, Kenji, to Sagami Chemical Research Center. Process for production of N-acyl-α-amino acids. 4,497,964, Cl. 562-406.000.
Okada, Junya: *See*—
Harada, Setsuo; and Okada, Junya, 4,497,803, Cl. 514-450.000.
Okamoto, Michio: *See*—
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Okamoto, Yoshiyuki; and Hwang, Edward F., to W. R. Grace & Co. Poly(dipropargylamine)and derivatives thereof per se and p-doped and processes for preparing same. 4,497,727, Cl. 252-500.000.
Okamura, Makoto. Rear viewer for automobile. 4,497,541, Cl. 350-626.000.
Oklahoma Agricultural and Mechanical Colleges Acting for and on Behalf of Oklahoma State University, Board of Regents for the: *See*—
Whitcomb, Carl E., 4,497,132, Cl. 47-66.000.
Okonogi, Tsuneo: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.
Okubo, Yuji: *See*—
Meguro, Hiroshi; Okubo, Yuji; and Watanabe, Sakuji, 4,497,564, Cl. 354-442.000.
Olin Corporation: *See*—
Breedis, John F.; and Fister, Julius C., 4,498,121, Cl. 361-401.000.
Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., 4,497,913, Cl. 521-137.000.
Olive Company, Inc., The: *See*—
Olive, Jerrel W., 4,497,124, Cl. 40-2.00R.
Olive, Jerrel W., to Olive Company, Inc., The. Stethoscope identification badge. 4,497,124, Cl. 40-2.00R.
Oliver, Roland A. G., to Alabama Power Company. Kit for teaching characteristics and use of electrical devices. 4,497,630, Cl. 434-224.000.
Olsen, Steffen C.; and Vinther, Arne, to Kemisk Vaerk Koge A/S. Arylide azopigments formed by coupling a diazoryl compound with an omega-ammoniumacetoactic acid derivative. 4,497,735, Cl. 534-603.000.
Olsson, Jan G.; and Samuelsson, Lars Erik. Method and apparatus for molding plastic wheels. 4,497,766, Cl. 264-328.800.
Olszewski, Douglas J.: *See*—
Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., 4,497,604, Cl. 414-131.000.
Olympus Optical Co., Ltd.: *See*—
Kimura, Kenji, 4,498,110, Cl. 358-342.000.
Kobayashi, Yuko, 4,497,546, Cl. 350-410.000.
Nagasaki, Tatsuo, 4,497,322, Cl. 128-660.000.
Osanai, Akira, 4,497,426, Cl. 226-187.000.
Omark Industries: *See*—
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., 4,497,232, Cl. 83-831.000.
Omata, Tetsuo: *See*—
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
O'Meara, Thomas R., to United States of America, Air Force. Jinc-trap resonator. 4,498,184, Cl. 372-92.000.
O'Neill, James K.: *See*—
Brule, James E.; O'Neill, James K.; and Palmer, David N., 4,497,726, Cl. 252-182.100.
Ono, Mikiya: *See*—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Oohori, Harumi: *See*—
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, 4,497,395, Cl. 192-4.00A.
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, to Nippon Telegraph & Telephone Public Corporation; and Tokyo Shibaura Denki Kabushiki Kaisha. Radio interference detection device for use in a multi-channel access angle-modulation radio system. 4,498,195, Cl. 455-205.000.
Oono, Hiroshi; and Teshima, Tsutomu, to Fuji Photo Film Co., Ltd. Cassette having radiation image storage medium. 4,498,005, Cl. 250-327.200.
Orlando, Daniel: *See*—
Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., 4,497,604, Cl. 414-131.000.
Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Company. Glycine 8-des-tyrosine 22 calcitonin. 4,497,731, Cl. 260-112.50T.
Orlowski, Ronald C.: *See*—
Seyler, Jay K.; Stahl, Glenn L.; and Orlowski, Ronald C., 4,497,732, Cl. 260-112.50T.
Osanai, Akira, to Olympus Optical Co., Ltd. Mechanism of controlling parallelism between the pinch roller and capstan shaft. 4,497,426, Cl. 226-187.000.
Ostermayer, Franz; and Zimmermann, Markus, to Ciba-Geigy Corporation. Derivatives of 3-aminopropane-1,2-diol. 4,497,813, Cl. 514-166.000.
Ostertag, Alfred, to Norton Company. Undercutting device for anchor holes. 4,497,383, Cl. 175-289.000.
Oswald, Donald E., to Kaiser Steel (Delaware), Inc. Method for electrostatic, epoxy coating of steel drum interiors and product thereof. 4,497,837, Cl. 426-398.000.

Otis Elevator Company: *See*—
Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, 4,497,391, Cl. 187-29.00R.
Ottagawa, Takaaki: *See*—
Bockris, John O'M.; and Ottagawa, Takaaki, 4,497,698, Cl. 204-129.000.
Otto Bock Orthopaedische Industrie KG: *See*—
Fettweis, Ewald; and Kindler, Wolfgang, 4,497,315, Cl. 128-78.000.
Otto, Stanislaus J.; and Doty, Verle L., to United States of America, Navy. Load-unload device—limit overload sensing device. 4,497,400, Cl. 198-468.000.
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, to Kabushiki Kaisha Medos Kenkyusho. Device for preventing the observing objective lens window of an endoscope from collecting moisture. 4,497,550, Cl. 350-584.000.
Ovren, Christer: *See*—
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Owen, Hartley: *See*—
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Owens, Cassandra D.: *See*—
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.
Owens-Corning Fiberglas Corporation: *See*—
Kaveh, Farrokh, 4,497,644, Cl. 65-14.000.
Spencer, Robert E.; and Clarke, Donald L., 4,497,771, Cl. 420-440.000.
Owens-Illinois, Inc.: *See*—
Kontz, Robert F.; and Moore, Gary L., 4,497,681, Cl. 156-363.000.
Ozaki, Shoichiro; Hoshiko, Tomonori; and Ogasawara, Tomio, to Ozaki, Shoichiro. 1-(N-Substituted carbamoyl)-5-fluorouracil derivatives and the carcinostatic agents containing same as active ingredients. 4,497,815, Cl. 517-274.000.
Ozawa, Masuo, to Nissan Motor Company, Limited. Cold-start boosting device of automotive engine. 4,497,305, Cl. 123-556.000.
Ozen Corporation: *See*—
Koiki, Eishi, 4,498,160, Cl. 369-63.000.
Paar, Michael S.; and McCarthy, Christopher I., to General Motors Corporation. Integral rocker arm hydraulic lifter and bearing assembly. 4,497,307, Cl. 123-90.330.
Pacetti, Larry D.: *See*—
Mikic, Frank; Fuhreck, John E.; and Pacetti, Larry D., 4,497,405, Cl. 206-378.000.
Pacholok, David R.: *See*—
Kwitkowski, Peter A.; and Pacholok, David R., 4,498,056, Cl. 330-296.000.
Padoan, Giorgio M., to Societa' Italiana Lenti S.I.L.-S.r.l. Casting plastic lenses from thermohardening monomer with compensation for polymer expansion and shrinkage. 4,497,754, Cl. 264-1.400.
Pagana, Enrico: *See*—
Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, 4,498,062, Cl. 333-135.000.
Page, Norman A.: *See*—
Breckinridge, James B.; Page, Norman A.; Shack, Roland V.; and Shannon, Robert R., 4,497,540, Cl. 350-168.000.
Paige, William P.: *See*—
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Palguta, Stephen E.: *See*—
Lay, Khin M.; and Palguta, Stephen E., 4,497,098, Cl. 28-171.000.
Pallos, Ferenc M., to Stauffer Chemical Company. Amidocarbonylsulfonic acid salts: herbicide antidotes. 4,497,653, Cl. 71-100.000.
Palmer, David N.: *See*—
Brule, James E.; O'Neill, James K.; and Palmer, David N., 4,497,726, Cl. 252-182.100.
Papalexis, Gregory C.; and Elliott, Richard I. Hotdog roll slicer. 4,497,233, Cl. 83-873.000.
Parkins, William E. Generating power from wind. 4,498,017, Cl. 290-44.000.
Parsons Controls Limited: *See*—
Millington, Michael J., 4,497,169, Cl. 59-84.000.
Pasierb, John: *See*—
Ghosh, Atish; and Pasierb, John, 4,498,079, Cl. 340-725.000.
Pastor, Stephen D.: *See*—
Spivack, John D.; and Pastor, Stephen D., 4,497,959, Cl. 549-253.000.
Patchen, Paul J.: *See*—
Berti, Jerome L.; and Patchen, Paul J., 4,497,497, Cl. 277-163.000.
Patel, Kiritkumar R., to Eaton Corporation. Fluid operated clutch or brake. 4,497,398, Cl. 192-88.00B.
Patel, Naren I., to Siecor Corporation. Filled transmission cable. 4,497,538, Cl. 350-96.230.
Pateman, Anthony J.: *See*—
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.
Patoflex Corporation: *See*—
Ehrlich, Johann, 4,497,123, Cl. 36-32.00R.
Paul Revere Corporation, The: *See*—
Ogman, Abraham, 4,497,163, Cl. 56-341.000.
Paul Wurth S.A.: *See*—
Mailliet, Pierre; and Kraemer, Edgar, 4,497,379, Cl. 173-39.000.
Pauli, Seymour; and Marino, Michael J., to Roi Corporation. Electronic thermometer. 4,497,585, Cl. 374-158.000.
Pav, Josef; and Jaegers, Heinz, to Kleinewefers GmbH. Method of and arrangement for processing lengths of material. 4,497,246, Cl. 100-35.000.
Payne, David B.; and Millar, Colin A., to Post Office. Coupling of dielectric optical waveguides. 4,497,536, Cl. 350-96.210.
Pearce, Kenneth W.: *See*—
Spoors, Gerald; and Pearce, Kenneth W., 4,497,781, Cl. 423-164.000.
Peche, Gerhard; and Bialkowski, Gunter, to Siemens Aktiengesellschaft. Vacuum switch tube. 4,497,990, Cl. 200-144.00B.
Peck, Gene E.: *See*—
Cooperberg, Bruce; and Peck, Gene E., 4,497,558, Cl. 354-303.000.
Pedersen, Hakon S.: *See*—
Longberg, Leif; and Pedersen, Hakon S., 4,497,471, Cl. 254-372.000.
Pederson, Harold T., Jr.: *See*—
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Peerless Machine & Tool Corporation: *See*—
Dempsey, Edmond N., 4,497,620, Cl. 425-145.000.
Peiffer, Dennis G.: *See*—
Lundberg, Robert D.; Peiffer, Dennis G.; Duvdevani, Ilan; and Phillips, Robert R., 4,497,923, Cl. 524-107.000.
Pelensky, Joseph: *See*—
Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, 4,497,468, Cl. 251-117.000.
Pelletier, Bernice: *See*—
Pelletier, Wilmer O., 4,497,489, Cl. 273-158.000.
Pelletier, Wilmer O., to Pelletier, Bernice. Bow and ladder amusement device. 4,497,489, Cl. 273-158.000.
Peltonen, Esko J., to O/Y KYRO A/B Tamglass. Method of and furnace assembly for bending glass sheets. 4,497,645, Cl. 65-107.000.
Pennington, John W.: *See*—
Thorsted, Kenneth G.; and Pennington, John W., 4,497,460, Cl. 244-3.300.
Pennsylvania Engineering Corporation: *See*—
Robert, Edgardo J., 4,497,656, Cl. 75-60.000.
Pennwalt Corporation: *See*—
King, James P.; and Tubbs, Paul, 4,497,719, Cl. 252-42.700.
Simkin, Joseph, 4,497,793, Cl. 424-32.000.
Strauss, Theodore R., 4,497,749, Cl. 261-64.00B.
Penty, Robert A.: *See*—
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,497,228, Cl. 82-1.00C.
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., to SCM Corporation. Acidulated meat emulsion. 4,497,845, Cl. 426-646.000.
PerfectData Corporation: *See*—
Davis, C. Paul, 4,498,114, Cl. 360-128.000.
Perkin-Elmer Corporation, The: *See*—
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.
Perkins, Douglas W.: *See*—
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,497,845, Cl. 426-646.000.
Perobelli, Aldo: *See*—
Pessina, Giorgio; and Perobelli, Aldo, 4,497,479, Cl. 270-54.000.
Perrier, Jean, to Stein Industrie. Spring support device for pipework. 4,497,466, Cl. 248-588.000.
Perry, Leroy A.: *See*—
Courter, Harry I.; and Perry, Leroy A., 4,497,985, Cl. 200-38.00R.
Peshkov, Izyaslav B.: *See*—
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.
Pessina, Giorgio; and Perobelli, Aldo. Device for symmetrically opening signatures made up of several sheets and arranging them onto a transport saddle. 4,497,479, Cl. 270-54.000.
Peters, Thomas A.: *See*—
Nelson, Jeffrey N.; and Peters, Thomas A., 4,497,122, Cl. 34-68.000.
Petersen, Christian C., to Polaroid Corporation. Electromagnetic shutter mechanism. 4,497,557, Cl. 354-234.100.
Petersen, Gary L.: *See*—
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., 4,497,208, Cl. 73-584.000.
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., to Danfoss A/S. Highly heatable fuel preparing element, particularly for vapor burners fed with liquid fuel. 4,497,625, Cl. 431-208.000.
Peterson, Charles K.: *See*—
Howard, Lowell C.; and Peterson, Charles K., 4,497,552, Cl. 354-106.000.
Peterson, William A.; and Sines, John C., to AT&T Bell Laboratories. Current limit circuit in single-ended forward converter utilizing core reset to initiate power switch conduction. 4,498,128, Cl. 363-21.000.
Petkoff, Peter M.: *See*—
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Petricca, Anthony V.: *See*—
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,497,845, Cl. 426-646.000.
Petterson, De Witt R.; Skelton, John; and Brookstein, David S., to Albany International Corp. Sucker rod. 4,497,866, Cl. 428-365.000.
Pfister GmbH: *See*—
Hafner, Hans W., 4,497,213, Cl. 73-862.380.
Phelan, James J., to AT&T Bell Laboratories. Method for processing essential lines in a communication system. 4,497,979, Cl. 179-18.00D.

Philip Morris Incorporated: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.
Philipp, Harald, to Tektronix, Inc. Optical fiber test instrument calibrator. 4,497,575, Cl. 356-73.100.
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., to Glaxo Group Limited. 11α-amino-androstanes. 4,497,805, Cl. 514-172.000.
Phillips, Bobby M., to Eastman Kodak Company. Hot shoe apparatus for preheating drafting, and stabilizing in sequence a running yarn strand. 4,497,627, Cl. 432-59.000.
Phillips, Kenneth G.: *See—*
Tai, Wun T.; and Phillips, Kenneth G., 4,497,927, Cl. 524-475.000.
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Phillips, Robert R.: *See—*
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Pickett, Charles G.; Charney, John G.; and Khasin, Marra, to Purolator Inc. Oil filter relief valve. 4,497,706, Cl. 210-130.000.
Pickett, Kenneth J.; and Derr, Carl B., to Earthway Products, Inc. Combination seeder and fertilizer dispenser for home vegetable gardens. 4,497,264, Cl. 111-73.000.
Pilat, John F.: *See—*
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
Pine, R. Davis, to General Electric Company. Three-pad journal bearing. 4,497,587, Cl. 384-117.000.
Pinson, George T., to Boeing Company, The. High torque digital stepping motor and control. 4,498,032, Cl. 318-37.000.
Pisano, Michael A.: *See—*
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Pizzarello, Frank A., to Rockwell International Corporation. Electrochromic nonvolatile memory device. 4,498,156, Cl. 365-215.000.
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Richards, Edmond A., 4,497,680, Cl. 156-345.000.
Plessey Overseas Limited: *See—*
Richardson, Christopher K., 4,498,193, Cl. 455-1.000.
Plevyak, Jerome B.; and Nicoletti, Adolph E. Computerized card shuffling machine. 4,497,488, Cl. 273-149.00R.
Plomer, Alan J.: *See—*
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.
Plough, Charles T., Jr.; and Hight, Ralph D., to Dale Electronics, Inc. High resistance film resistor. 4,498,071, Cl. 338-308.000.
Pluss, Raymond, to Sulzer Brothers Limited. Zig-zag profile packing and method of making. 4,497,751, Cl. 261-94.000.
Pneumo Corporation: *See—*
Salemka, Robert M., 4,498,036, Cl. 318-561.000.
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Polony, Rudolf: *See—*
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Pooley, Frederick D., to University College Cardiff Consultants Limited. Microbial leaching of sulphide-containing ores. 4,497,778, Cl. 423-27.000.
Popow, Anatoliy. Continuous molding apparatus. 4,497,619, Cl. 425-75.000.
Portnoy, Robert C., to Du Pont de Nemours, E. I., and Company. Thiadiazinone plant disease control agents. 4,497,807, Cl. 514-222.000.
Post Office: *See—*
Payne, David B.; and Millar, Colin A., 4,497,536, Cl. 350-96.210.
Postbeschild, John W., to Smiths Industries Public Limited Company. Warm-air hand drying apparatus using an induced heated air flow. 4,497,999, Cl. 219-365.000.
Povelichenko, Anatoly P.: *See—*
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Price, Edgar E., to Xerox Corporation. Optical system utilizing a variable focal length reflector lens. 4,497,617, Cl. 350-425.000.
Pritchard, Dalton H., to RCA Corporation. Apparatus for frame-to-frame comb filtering composite TV signal. 4,498,099, Cl. 358-31.000.
Prochaska, Charles R.: *See—*
McCarthy, Karen; and Prochaska, Charles R., 4,497,602, Cl. 410-69.000.
Procter & Gamble Company, The: *See—*
Beimesch, Wayne E.; and Hortel, Thomas C., 4,497,757, Cl. 264-13.000.
Proctor, Robert H., to Murray Corporation. Wire grip clamp with radially-directed screw take-up. 4,497,090, Cl. 24-20.00R.
Provost, Alfred M., to Izzo, Anthony J.; and Sutter, Orlin. Portable basin apparatus. 4,497,077, Cl. 4-628.000.
Przybylla, Fritz: *See—*
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Psi Star, Inc.: *See—*
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Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., to Georgia Tech Research Institute. Thermochemical conversion of biomass to syngas via an entrained pyrolysis/gasification process. 4,497,637, Cl. 48-111.000.
Purolator Inc.: *See—*
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Quaker Oats Company, The: *See—*
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Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, to Institut Francais du Petrole. Process for methane synthesis by catalytic reduction of carbon monoxide in aqueous phase. 4,497,910, Cl. 518-700.000.
Quinica Organica de Mexico, S.A.: *See—*
Rubio, Valentin de A., 4,497,646, Cl. 71-3.000.
Quinn, Maxie E.: *See—*
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Rabatin, Jacob G., to General Electric Company. X-ray image converter devices utilizing rare earth oxyhalide phosphors. 4,498,008, Cl. 250-486.100.
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Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., to Olin Corporation. Process for preparing a stable dispersion of a polymer in a polyol and its use in the production of high resilience polyurethane foam. 4,497,913, Cl. 521-137.000.
Rainal, Attilio J., to AT&T Bell Laboratories. High-speed, high pin-out LSI chip package. 4,498,122, Cl. 361-414.000.
Ramelot, Daniel L., to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie. Apparatus for taking gaseous samples. 4,497,214, Cl. 73-863.120.
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Rank Organisation Limited, The: *See—*
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Rao, Krishna K.: *See—*
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Ratajski, Michel, to H. Finger, Firma. Wrist watch case with vulcanized gasket. 4,497,584, Cl. 368-294.000.
Ratell, Raymond E., Jr. Hydraulically-operated pump jack with chain drive. 4,497,616, Cl. 417-390.000.
Rausch, Paul G., to Celtite, Inc. Cartridge containing multiple areas of a multi-component mix and method of making the same. 4,497,403, Cl. 206-219.000.
Raychem Corporation: *See—*
Cameron, John K., 4,497,527, Cl. 339-30.000.

Toy, Lester T., 4,497,926, Cl. 524-271.000.
Razavi, Saeid M., to Electro-Craft Corporation. Velocity servo controller. 4,498,037, Cl. 318-561.000.
RCA Corporation: *See—*
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Pritchard, Dalton H., 4,498,099, Cl. 358-31.000.
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Rebick, Charles: *See—*
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Reese, Dirk; and Rigler, Josef K., to Chemische Werke Huls AG. Fine particulate, expandable styrene polymers suitable for the production of rapidly mold-ejected cellular bodies. 4,497,912, Cl. 521-59.000.
Regie Nationale des Usines Renault: *See—*
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Reiber, Dietfried: *See—*
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Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, to Bayer Aktiengesellschaft. Very fine denier synthetic fibers. 4,497,868, Cl. 428-400.000.
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Reiplinger, Erich, to Transformatoren Union Aktiengesellschaft. Transformer with smooth-walled tank. 4,497,387, Cl. 181-202.000.
Reitzel, Henry M., to Stant Inc. One-piece cap. 4,497,419, Cl. 220-302.000.
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Process for cropping the head of self-luminous rolled material, especially metal strips and system for cropping the head. 4,497,192, Cl. 72-203.000.
Rempfler, Hermann: *See—*
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Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Dibenzofuranyloxyalkylimidazolium salts, their preparation and their use as microbicides. 4,497,819, Cl. 514-397.000.
Repella, James A., to Microdot Inc. Hydrodynamic slitted seal and method of manufacture thereof. 4,497,496, Cl. 277-134.000.
Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, to Agfa-Gevaert AG. Apparatus for squaring, stapling, and stacking copy sets. 4,497,478, Cl. 270-53.000.
RESEM, S.p.A.: *See—*
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Retrum, Rowland. Apparatus for hydrolyzing keratinaceous material. 4,497,733, Cl. 260-123.700.
Reudink, Douglas O., to AT&T Bell Laboratories. Technique for digital split-channel transmission using interpolative coders and decoders. 4,498,173, Cl. 371-30.000.
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, to Agence National de Valorisation de la Recherche (ANVAR). Organ prostheses. 4,497,074, Cl. 3-1.000.
Rey, S. Frank, to Exxon Research & Engineering Co. Epoxy resin compositions of enhanced creep resistance. 4,497,764, Cl. 264-261.000.
Reyes, Daniel. Electric generating system. 4,498,014, Cl. 290-4.000.
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Reynolds, George O., to Honeywell Inc. Optical lithographic system having a dynamic coherent optical system. 4,498,009, Cl. 250-452.100.
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Richard, Christian; and Catros, Jean Y., to Thomson-CSF. Method and apparatus for a transmission system for transmitting an image at a reduced output. 4,498,102, Cl. 358-133.000.
Richards, Alwyn H.: *See—*
Whitlam, Joseph E.; Richards, Alwyn H.; and Akers, Brian, 4,497,389, Cl. 182-150.000.
Richards, Edmond A., to Plasma-Therm, Inc. Apparatus for conveying a semiconductor wafer. 4,497,680, Cl. 156-345.000.
Richardson, Christopher K., to Plessey Overseas Limited. Jammer transmitter. 4,498,193, Cl. 455-1.000.
Richardson, David A.; and Coney, Michael H., to Rolls-Royce Limited. Shroud assembly for a gas turbine engine. 4,497,610, Cl. 415-116.000.
Richardson, Patrick L., to Carrier Corporation. Annunciator. 4,498,077, Cl. 340-648.000.
Richmond, Frank M.: *See—*
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Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
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Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, to Chemische Werke Huls AG. Production of fine particulate, expandable styrene polymers with improved properties. 4,497,911, Cl. 521-56.000.
Rigler, Josef K.: *See—*
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Rijckaert, Albert M. A.; and Walraven, Anthonie, to U.S. Philips Corporation. Method and apparatus for recording or reproducing stereophonic information in a magnetic record carrier. 4,498,111, Cl. 360-27.000.
Riker Laboratories, Inc.: *See—*
Banitt, Elden H., 4,497,954, Cl. 546-221.000.
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Rindfleisch, Werner: *See—*
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Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.
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Robert, Edgardo J., to Pennsylvania Engineering Corporation. Steel making method. 4,497,656, Cl. 75-60.000.
Robeson, Lloyd M.; Harris, James E.; and Maresca, Louis M., to Union Carbide Corporation. Aromatic polyformal blends. 4,497,924, Cl. 524-151.000.
Robinson, Mark L.: *See—*
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Robyn, Pierre; and Deschepper, Pierre, to Glaverbel. Composite refractory articles and method of manufacturing them. 4,497,473, Cl. 266-44.000.
Rock-Tenn Company: *See—*
Wischusen, Henry, III, 4,497,433, Cl. 229-30.000.
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Galbraith, Lyle D., 4,497,632, Cl. 441-30.000.
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Pizzarello, Frank A., 4,498,156, Cl. 365-215.000.
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Rodgers, John M.: *See—*
Carter, William M.; and Rodgers, John M., 4,497,470, Cl. 254-134.3FT.
Rodieck, Chester C. Sequencing valve and irrigation system. 4,497,333, Cl. 137-122.000.
Rodriguez, Manuel S., to Du Pont de Nemours, E. I., and Company. Method for forming cationic technetium complexes useful as radiodiagnostic agents. 4,497,790, Cl. 424-1.100.
Rogers, Terrence E., to General Electric Company. Digital automatic frequency control with tracking. 4,498,191, Cl. 455-164.000.
Rogers, Thurmond J., Jr. Board game affording competitive challenge among players. 4,497,490, Cl. 273-249.000.

Roi Corporation: *See*—
Paull, Seymour; and Marino, Michael J., 4,497,585, Cl. 374-158.000.
Rolls-Royce Limited: *See*—
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Richardson, David A.; and Coney, Michael H., 4,497,610, Cl. 415-116.000.
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Romer, Dietmar: *See*—
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Rosaen, Borje O. Valve assembly. 4,497,336, Cl. 137-244.000.
Rose, Floyd D. Apparatus for restraining and fine tuning the strings of a musical instrument, particularly guitars. 4,497,236, Cl. 84-298.000.
Rosen, Murray: *See*—
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Rosin, Michael L.: *See*—
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Ross, Alexander S.: *See*—
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Ross, William E., to Litton Systems, Inc. Method and device for increasing the density of a plurality of switchable magnetic elements. 4,497,545, Cl. 350-376.000.
Rossi, Alessandro: *See*—
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Rozmus, John M., to Scientific Atlanta, Inc. Multiaccess broadcast communication system. 4,498,169, Cl. 370-85.000.
Rubin, Frank D.; and Schumacher, Roger A., to General Motors Corporation. Brake system pressure bleed device. 4,497,176, Cl. 60-584.000.
Rubio, Valentin de A., to Quinica Organica de Mexico, S.A. Cultivation of rice with simultaneous control of weeds and fungus disease. 4,497,646, Cl. 71-3.000.
Rucker, Klaus G., to Du Pont de Nemours, E. I., and Company. Liquid-disabled blasting cap. 4,497,251, Cl. 102-202.600.
Rudek, Fred, to Exo Sensors, Inc. Radiation compensator for gas sensors. 4,498,049, Cl. 324-443.000.
Rudolf, Peter: *See*—
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.
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Crapser, James R., 4,497,456, Cl. 242-55.550.
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Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, 4,497,392, Cl. 188-59.000.
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Sabranski, Udo, to Rheinmetall GmbH. Armor-piercing projectile. 4,497,253, Cl. 102-476.000.
Saeki, Gouji: *See*—
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St. Lawrence Technologies Limited: *See*—
Assarsson, Per G.; and Nagasuye, Joseph H., 4,497,896, Cl. 435-161.000.
Saito, Yasuhiro; and Tatemichi, Takaomi, to Kabushiki Kaisha Daini Seikosha. Automatic coordinate determining device having electrostatic shielding. 4,497,977, Cl. 178-19.000.
Sakagami, Teruo: *See*—
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.
Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Picture outline tracing and recording machine. 4,498,109, Cl. 358-296.000.
Sakurai, Kunio; Ito, Hiroshi; and Nozaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Antireflection optical coating. 4,497,539, Cl. 350-164.000.
Salemka, Robert M., to Pneumo Corporation. Adaptive control system. 4,498,036, Cl. 318-561.000.
Sall, Surinderpal S.; and Kemp, John, to Crane Packing Limited. Mechanical face seals with wear monitor means. 4,497,493, Cl. 277-2.000.
Salloum, Robert J.; and Atkins, Richard P., to General Motors Corporation. Tough epoxy polymers formable by reaction injection molding. 4,497,945, Cl. 528-94.000.
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Sanada, Sakae; and Ohzawa, Yoshiyuki, to Hitachi, Ltd. Method for manufacturing ceramic substrate. 4,497,677, Cl. 156-89.000.
Sanderson, John R.; and Krishnan, Sivaram, to Mobay Chemical Corporation. Polycarbonate compositions having improved heat deflection temperature. 4,497,947, Cl. 528-174.000.
Sandis, Stylianos: *See*—
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Sandler, Sheldon S., to Geo-Centers, Inc. Broad band liquid loaded dipole antenna. 4,498,086, Cl. 343-807.000.
Sankyo Company, Limited: *See*—
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Sanstrom, Grant H.; and Sanstrom, Beverly J. Timer actuated pet feeder. 4,497,280, Cl. 119-51.110.
Santen, Sven O., to SKF Steel Engineering Aktiebolag. Method and device for continuous supply of lumps of material to a shaft. 4,497,609, Cl. 414-786.000.
Santrade Limited: *See*—
Lindholm, Leif, 4,497,660, Cl. 75-240.000.
Sargeson, Alan M.; Herlt, Anthony J.; and Harrowfield, John M., to Australian National University, The. Metal cage complexes and production thereof. 4,497,737, Cl. 260-239.0BC.
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Method of machining cast iron. 4,497,228, Cl. 82-1.00C.
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Sasaki, Isao, to Nittan Company, Limited. Selectively testable fire detector. 4,498,074, Cl. 340-514.000.
Sasaki, Takafumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Locking device for door of cooking apparatus. 4,497,513, Cl. 292-217.000.
Sasano, Naoshige: *See*—
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Sasayama, Takao; and Amano, Matsuo, to Hitachi, Ltd. Fuel control apparatus for internal combustion engine. 4,497,302, Cl. 123-489.000.
Sashiki, Takashi, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus. 4,497,385, Cl. 177-59.000.
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Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, to Hitachi, Ltd. Pulse generator for solid-state television camera. 4,498,106, Cl. 358-213.000.

Sato, Koji: *See*—
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Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, to Hitachi, Ltd. Steam wetness measuring apparatus. 4,497,577, Cl. 356-336.000.

Satomi, Keisuke: *See*—
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Sauter, Hubert: *See*—
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Sawran, William R.; Turrill, Frank H.; Newman, John W.; Hall, Norman W.; and Ward, Clifford, to Ashland Oil, Inc. Process for the manufacture of carbon fibers. 4,497,789, Cl. 423-447.400.

Scardovi, Alessandro, to Ing. C. Olivetti & C., S.p.A. Control system for ink jet printing element. 4,498,089, Cl. 346-140.00R.

Schaaf, Bruce M. Spin-check device for arrows. 4,497,207, Cl. 73-432.00R.

Schaal, Gunter: *See*—
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Schaefer, Ernest R. Oil scavenging material. 4,497,688, Cl. 162-181.100.

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Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, to Compagnie Francaise De Produits Industriels. Process for the treatment of phosphatized metal surfaces with a composition comprising trivalent titanium. 4,497,666, Cl. 148-6.15R.

Scharfenbergkupplung GmbH: *See*—
Forster, Hilmar; and Wonka, Heinz-Georg, 4,497,414, Cl. 213-76.000.

Schatteman, Etienne A., to Staar S. A. Automatic disc loading apparatus. 4,498,162, Cl. 369-77.100.

Schechter, Michael M., to Ford Motor Company. Plunger type fuel injection pump. 4,497,299, Cl. 123-451.000.

Schefer, Kurt; and Salvisberg, Kurt, to Sulzer Brothers Limited. Filament winding machine. 4,497,450, Cl. 242-18.00A.

Scheidegger, Albert, to ETS Scheidegger W. & Cie. Method of and apparatus for enveloping moving articles. 4,497,156, Cl. 53-399.000.

Schen, Michael A.: *See*—
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Schering Aktiengesellschaft: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

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Schilling, Curtis L., Jr.; Williams, Thomas C.; and Wesson, John P., to Union Carbide Corporation. Branched polycarbosilanes and their use in the production of silicon carbide. 4,497,787, Cl. 423-345.000.

Schilling, William, to Alco Foodservice Equipment Company. Mechanical post mix beverage dispensing system. 4,497,421, Cl. 222-144.500.

Schillinger, Ekkehard: *See*—
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Schleiermacher, Herbert; and Bauer, Lothar, to Klockner-Humboldt-Deutz Aktiengesellschaft. Intake system with oscillator tubes. 4,497,287, Cl. 123-52.0MC.

Schleimer, Stephen I.: *See*—
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Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Schlosser, Hans-Joachim: *See*—
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Schlosser, Wolfgang O. W.: *See*—
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Schmidt, Frank; and Tyrroff, Horst, to VEB Zentrum fur Forschung Und Technologie Mikroelektronik. Method for the production of a self-supporting mask. 4,497,884, Cl. 430-5.000.

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Schmidt, Siegfried, to Buropatent AG. Isolating device for an opening traversed by conveyor cars. 4,497,254, Cl. 104-1.00R.

Schmitz, Horst; and Krompass, Wolfgang, to Krauss-Maffei Aktiengesellschaft. Mixing head for reactive materials. 4,497,579, Cl. 366-134.000.

Schmoock, Roy F., to Fischer & Porter Company. Flangeless electromagnetic flowmeter. 4,497,212, Cl. 73-861.120.

Schnall, Gunther: *See*—
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Schneider, Bruce H.: *See*—
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Schneider, Charles; Schneider, Bruce H.; and Schneider, Jerry S. Method of making aesthetic quilting. 4,497,269, Cl. 112-262.300.

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Gnadig, Gerhard; Przybylla, Fritz; and Schneider, Friedrich, 4,497,358, Cl. 164-80.000.

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Schott, Lawrence A.; and Schott, Roger A. Lubricating apparatus and system. 4,497,149, Cl. 52-174.000.

Schott, Roger A.: *See*—
Schott, Lawrence A.; and Schott, Roger A., 4,497,149, Cl. 52-174.000.

Schoute, Frederik C.; Doorduin, Adrianus W.; and Hooijmans, Jacobus L. M., to U.S. Philips Corporation. Method and apparatus for preventing overloading of the central controller of a telecommunication system. 4,497,978, Cl. 179-9.000.

Schowengerdt, Frank D.: *See*—
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Schrader, Rolf, to Grafon AG. Method and apparatus for the manufacture of a three-dimensional, shaped graphite electrode utilizing a three-dimensional, shaped file. 4,497,101, Cl. 29-76.00R.

Schramm, Buford J. Barrel type engine with plural two-cycle cylinders and pressurized induction. 4,497,284, Cl. 123-41.470.

Schreiber, Jurgen, to Buderus Aktiengesellschaft. Apparatus for simultaneously grinding inner and outer workpiece surfaces. 4,497,138, Cl. 51-3.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See*—
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, 4,497,166, Cl. 57-263.000.

Schuler, Murry W.: *See*—
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Schulke, Karl A., to Heraeus-Quarzschmelze. Bell of opaque fused silica. 4,497,277, Cl. 118-733.000.

Schulte, Hans-Gerd, to Krupp Polysius AG. Process for the production of sintered magnesite from magnesium hydroxide. 4,497,761. Cl. 264-66.000.

Schulte, Thomas L. Method of chemically debriding ulcerated necrotic tissue. 4,497,824, Cl. 514-166.000.

Schulz, Axel, to Robert Bosch GmbH. Method and apparatus for concealing errors in a digital television signal. 4,498,104, Cl. 358-160.000.

Schumacher, Roger A.: *See*—
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Schumaker, Eugene J., to Adjustable Fixture Company. Lamp with one arm fork support. 4,498,125, Cl. 362-216.000.

Schundehutte, Karl H.: *See*—
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Schwarzmann, Alfred, to RCA Corporation. Method and apparatus for neutron radiation monitoring. 4,498,007, Cl. 250-390.000.
Schwarzmann, Alfred, to RCA Corporation. Folded dipole radiating element. 4,498,085, Cl. 343-795.000.
Scientific Atlanta, Inc.: *See*—
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SCM Corporation: *See*—
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,497,845, Cl. 426-646.000.
Scordato, Richard E., to Medical Laboratory Automation, Inc. Coagulation instrument for performing clotting tests. 4,497,774, Cl. 422-73.000.
Scott, Alexander, to J & P Coats, Limited. Method for production of synthetic yarn and yarn-like structures. 4,497,099, Cl. 28-220.000.
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., to Omark Industries. Cutting tool with cutting tooth insert. 4,497,232, Cl. 83-831.000.
Sebesta, Edward H., to Amdahl Corporation. Lift-off process for depositing metal on a substrate. 4,497,684, Cl. 156-643.000.
Sedam, Jason K., to Coca-Cola Company, The. Apparatus and method for loading syrup and CO_2 containers into a portable post-mix beverage dispenser unit. 4,497,348, Cl. 141-2.000.
Segawa, Keiji; Naoi, Mikio; and Murakami, Masaki, to Victor Company of Japan, Limited. Diamond pickup stylus with good grindability. 4,498,163, Cl. 369-126.000.
Seiko Instruments & Electronics Ltd.: *See*—
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Seiko Koki Kabushiki Kaisha: *See*—
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Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, to Nippon Infrared Industries Co., Ltd. Laser irradiating apparatus. 4,497,319, Cl. 128-303.100.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Epoxy phosphate-carboxyl copolymers and aqueous coatings containing the same. 4,497,946, Cl. 528-99.000.
Seko, Osamu: *See*—
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Selsing, Jorgen, to G & W Electric Company. Resistor and capacitor graded termination. 4,497,975, Cl. 174-19.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
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Sendzimir, Tadeusz. Twin coil strip accumulator. 4,497,452, Cl. 242-55.000.
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Sessoms, L. A. Bush ax sharpening holder and method of retaining. 4,497,142, Cl. 51-218.00R.
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Setsune, Jun-ichiro: *See*—
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Severinsson, Anders S., to Telefonaktiebolaget LM Ericsson. Method of maintaining a predetermined beam direction in a laser pulse transmitter and an apparatus for carrying out the method. 4,498,180, Cl. 372-29.000.
Severinsson, Lars M.: *See*—
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Sewell, John S.; McColl, Frederick A.; and Petkoff, Peter M., to Union Gas Limited. Apparatus for servicing gas lines. 4,497,332, Cl. 137-15.000.
Seyler, Jay K.; Stahl, Glenn L.; and Orlowski, Ronald C., to Armour Pharmaceutical Company. 1A-Endo-glycine-calcitonin. 4,497,732, Cl. 260-112.50T.
Seyler, Jay K.: *See*—
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Shack, Roland V.: *See*—
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Shannon, Suel G., to AMP Incorporated. Electrical connector having a coupling indicator. 4,497,530, Cl. 339-89.00M.
Sharp Kabushiki Kaisha: *See*—
Haneda, Isamu, 4,498,144, Cl. 364-900.000.
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Shaw, David N., to Dunham-Bush, Inc. Oil atomizing compressor working fluid cooling system for gas/vapor/helical screw rotary compressors. 4,497,185, Cl. 62-468.000.
Shedigian, Vandos: *See*—
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Sheflin, Daniel J.: *See*—
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Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P. Gold-plating electrolyte and process for preparing same. 4,497,696, Cl. 204-46.00G.
Shepard, Joseph F.: *See*—
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,498,095, Cl. 357-23.000.
Shepherd, David, to Imperial Chemical Industries, PLC. Chromatography columns. 4,497,711, Cl. 210-656.000.
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., to Toronto General Burying Grounds, The Trustees of The. Monument foundation digger. 4,497,608, Cl. 414-726.000.
Sherman, Robert H.: *See*—
McMullen, John W.; Wheeler, Michael G.; Cullingford, Hatice S.; and Sherman, Robert H., 4,497,775, Cl. 422-159.000.
Sherrow, Lionel, to Budd Company, The. Emergency release handle. 4,497,512, Cl. 292-92.000.
Sherwood Medical Company: *See*—
Gindler, E. Melvin, 4,497,792, Cl. 424-3.000.
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi. 1-Oxadethiacephalosporin compound and antibacterial agent containing the same. 4,497,811, Cl. 424-248.510.
Shields, D. Leet. Shear with cutting height adjustment. 4,497,230, Cl. 83-600.000.
Shigeta, Kengo: *See*—
Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, 4,497,577, Cl. 356-336.000.
Shimamoto, Ichiji: *See*—
Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, 4,498,067, Cl. 336-65.000.
Shimizu, Seiki: *See*—
Arakawa, Hideo; Kuniya, Keiichi; Chiba, Akio; and Shimizu, Seiki, 4,497,875, Cl. 428-620.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, 4,497,943, Cl. 528-22.000.
Tawara, Yoshio; and Ohashi, Ken, 4,497,672, Cl. 148-102.000.
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, 4,497,722, Cl. 252-62.540.
Shinji, Morozumi: *See*—
Tatsushi, Asakawa; and Shinji, Morozumi, 4,498,040, Cl. 323-299.000.
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Plating current automatic switching method and apparatus. 4,497,695, Cl. 204-28.000.
Shinko Electric Co., Ltd.: *See*—
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.
Shinokura, Kiichiro: *See*—
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Shionogi & Co., Ltd.: *See*—
Ebata, Mitsuo; Miyake, Yukio; and Kawamura, Yoshimi, 4,497,797, Cl. 424-118.000.
Shiozawa, Hiroaki: *See*—
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Shirai, Shoji: *See*—
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.
Shirakawa, Masami, to Sony Corporation. Motor speed control circuit. 4,498,034, Cl. 318-314.000.
Siecor Corporation: *See*—
Patel, Naren I., 4,497,538, Cl. 350-96.230.
Siemens Aktiengesellschaft: *See*—
Aulich, Hubert; Eisenrith, Karl-Heinz; and Urbach, Hans-Peter, 4,497,675, Cl. 148-191.000.
Hoffmann, Kurt, 4,498,154, Cl. 365-149.000.
Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , 4,497,109, Cl. 29-578.000.
Peche, Gerhard; and Bialkowski, Gunter, 4,497,990, Cl. 200-144.00B.
Torggler, Norbert; and Franz, Dietmar, 4,497,976, Cl. 178-3.000.
Wagner, Wolfgang, 4,498,176, Cl. 371-47.000.

Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, to Hitachi, Ltd. Rotor shaft and manufacturing method thereof. 4,497,670, Cl. 148-12.00R.

Silfvast, William T.: *See—*
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,498,182, Cl. 372-62.000.

Sima Products Corporation: *See—*
Breslau, Steven M., 4,497,127, Cl. 40-367.000.

Simkin, Joseph, to Pennwalt Corporation. Microencapsulated naturally occuring pyrethrins. 4,497,793, Cl. 424-32.000.

Simonds, Edward. Fuel impact device. 4,497,750, Cl. 261-64.00C.

Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,497,955, Cl. 546-345.000.

Simpson, Frank F.: *See—*
Flack, John H., deceased; and Simpson, Frank F., 4,497,380, Cl. 173-117.000.

Simpson, Harold G.; and Hollman, Bert D., to Nucor Corporation. Standing seam metal roof assembly. 4,497,151, Cl. 52-520.000.

Simpson, James K., to Gurtler, Hebert & Co., Inc. Anti-twist control system for deviated conductor driving systems. 4,497,372, Cl. 166-381.000.

Simpson, Robert E., to United States of America, Interior. Machine for mixing and injecting water and grout into a roof bolt hole. 4,497,578, Cl. 366-42.000.

Sincerbox, Glenn T., to International Business Machines Corporation. Holographic optical head. 4,497,534, Cl. 350-3.720.

Sines, John C.: *See—*
Peterson, William A.; and Sines, John C., 4,498,128, Cl. 363-21.000.

Singer, Arnold J.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,497,831, Cl. 514-717.000.

Singer Company, The: *See—*
Killinger, Karl H., 4,497,268, Cl. 112-169.000.
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,497,267, Cl. 112-158.00A.

Sinko, Nina I.: *See—*
Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.

Sip - Societa Italiana Per L'Esercizio Telefonico p.A.: *See—*
Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, 4,498,062, Cl. 333-135.000.

Sips, Johannes J.: *See—*
Houthoff, Jacobus; and Sips, Johannes J., 4,498,094, Cl. 357-22.000.

Skelton, John: *See—*
Petterson, De Witt R.; Skelton, John; and Brookstein, David S., 4,497,866, Cl. 428-365.000.

SKF Steel Engineering Aktiebolag: *See—*
Santen, Sven O., 4,497,609, Cl. 414-786.000.

Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, to Schering Aktiengesellschaft. Carbacyclins, their preparation and pharmacological use. 4,497,830, Cl. 514-277.000.

Slaugh, Lynn H.: *See—*
Lewis, Robert M.; and Slaugh, Lynn H., 4,497,908, Cl. 502-245.000.

Sloviter, Henry A., to University of Pennsylvania, The. Process for preparing perfluorochemical emulsion artificial blood. 4,497,829, Cl. 514-672.000.

Smart, David C., to Eastman Kodak Company. Shutter mechanism. 4,497,553, Cl. 354-135.000.

Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., to Interox Chemicals Ltd. Aqueous bleach compositions. 4,497,725, Cl. 252-102.000.

Smith International, Inc.: *See—*
Hart, Lawrence D., 4,497,384, Cl. 175-315.000.

Smith, Samuel W. Elastic hosiery applicator. 4,497,424, Cl. 223-111.000.

Smith, Stanley, to Rolls-Royce Limited. Bearing chamber pressurization system for a machine. 4,497,172, Cl. 60-226.100.

Smith, Ulys. Woodwork cutting device such as a wood chisel with sharpening guides provided therewith. 4,497,355, Cl. 145-24.000.

Smiths Industries Public Limited Company: *See—*
Postbeschild, John W., 4,497,999, Cl. 219-365.000.

Smits, Jozef A. F.: *See—*
Aliani, Giorgio; Lechat, Jacques B.; and Smits, Jozef A. F., 4,497,941, Cl. 526-331.000.

Smolik, Robert A. Electrical receptacle box assembly. 4,497,416, Cl. 220-3.500.

Smoot, Lanny S., to AT&T Bell Laboratories. Transimpedance amplifier for optical receivers. 4,498,001, Cl. 250-214.00A.

SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, 4,497,193, Cl. 72-302.000.

Snap-on Tools Corporation: *See—*
Mikic, Frank; Fuhreck, John E.; and Pacetti, Larry D., 4,497,405, Cl. 206-378.000.

Societa' Italiana Lenti S.I.L.-S.r.l.: *See—*
Padoan, Giorgio M., 4,497,754, Cl. 264-1.400.

Societa'Cavi Pirelli S.p.A.: *See—*
Dotti, Enrico; and Mariani, Beniamino, 4,497,164, Cl. 57-6.000.

Societe Alsacienne de Construction de Materiel Textile: *See—*
Kiwior, Denis; and Riner, Victor, 4,497,347, Cl. 139-449.000.

Societe Anonyme Automobile Citroen: *See—*
Bortolussi, Gerard, 4,497,289, Cl. 123-90.270.

Societe Anonyme Automobiles Peugeot: *See—*
Bortolussi, Gerard, 4,497,289, Cl. 123-90.270.

Societe Cortial, S.A.: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,497,812, Cl. 514-211.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Errass, Werner; and Waldmeier, Eduard, 4,497,843, Cl. 426-602.000.

Societe Europeenne des Produits Refractaires: *See—*
Blanchet, Pierre; and Recasens, Joseph, 4,497,628, Cl. 432-179.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, 4,497,510, Cl. 285-18.000.

Soclof, Sidney I., to Rockwell International Corporation. Small area high value resistor with greatly reduced parasitic capacitance. 4,497,685, Cl. 156-647.000.

Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., to Pitney Bowes Inc. Electronic postage meter having plural computing systems. 4,498,187, Cl. 375-117.000.

Sodeyama, Osamu: *See—*
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, 4,497,943, Cl. 528-22.000.

Sokolov, Sergei S.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Solex Research Corporation of Japan: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,497,655, Cl. 75-34.000.

Sony Corporation: *See—*
Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, 4,498,090, Cl. 346-159.000.
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.
Katakura, Masayuki; and Tenma, Takumi, 4,498,053, Cl. 330-261.000.
Shirakawa, Masami, 4,498,034, Cl. 318-314.000.

Sorlien, Mark D., to Minnesota Mining and Manufacturing Company. Cable sheath repair method. 4,497,760, Cl. 264-36.000.

Southern California Gas Co.: *See—*
Teague, W. Dorwin, Jr., 4,497,362, Cl. 165-54.000.

Southwest Research Institute: *See—*
Kwun, Hegeon; and Teller, Cecil M., II, 4,497,209, Cl. 73-601.000.

Spence, Randy D.: *See—*
Hexamer, Donald L.; Spence, Randy D.; and Hesselberg, Johnny, 4,498,047, Cl. 324-158.00F.

Spencer, Robert E.; and Clarke, Donald L., to Owens-Corning Fiberglas Corporation. Low tantalum content cobalt-base alloy. 4,497,771, Cl. 420-440.000.

Sperry Corporation: *See—*
Benrud, Vernal M., 4,498,058, Cl. 330-300.000.
Larson, Brian R., 4,498,177, Cl. 371-52.000.
Murtland, William H., 4,497,528, Cl. 339-45.00M.

Spilker, Harry: *See—*
Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, 4,498,011, Cl. 250-507.100.

Spilker, Susanne: *See—*
Wendel, Rainer, 4,497,463, Cl. 248-95.000.

Spillers, Frank W.: *See—*
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,497,112, Cl. 29-825.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Substituted (4-hydroxyphenylthio) succinic anhydride or succinate stabilizers. 4,497,959, Cl. 549-253.000.

Spoors, Gerald; and Pearce, Kenneth W., to Steetley Refractories Limited. Manufacture of magnesium hydroxide. 4,497,781, Cl. 423-164.000.

Sprecher & Schuh AG: *See—*
Sturzenegger, Christian; and Blatter, Johann, 4,497,991, Cl. 200-148.00A.

Sproat, William B., Jr. Multipurpose material working tool. 4,497,353, Cl. 144-1.00R.

Sproul, William W., III, to International Business Machines Corporation. Interrupt processor. 4,498,136, Cl. 364-200.000.

Square D Company: *See—*
Moore, Prentice G., 4,498,138, Cl. 364-483.000.

Squires, Thomas G.: *See—*
Aida, Tetsuo; Squires, Thomas G.; and Venier, Clifford G., 4,497,636, Cl. 44-15.00R.

Squitieri, Vincent: *See—*
Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., 4,497,533, Cl. 339-143.00R.

Staar S. A.: *See—*
Schatteman, Etienne A., 4,498,162, Cl. 369-77.100.

Stace-Allen Chuck, Inc.: *See—*
Allen, Joseph S., 4,497,499, Cl. 279-119.000.

Stager, Daniel J. Welding rod package. 4,497,407, Cl. 206-443.000.

Stahl, Glenn L.: *See—*
Seyler, Jay K.; Stahl, Glenn L.; and Orlowski, Ronald C., 4,497,732, Cl. 260-112.50T.

Standard Oil Company (Indiana): *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,497,902, Cl. 502-65.000.

Standard Products Company, The: *See—*
Nussbaum, Joel H., 4,497,678, Cl. 156-244.110.

Stang, Howard D.: *See*—
Salser, Winston A.; Cline, Martin J.; and Stang, Howard D., 4,497,796, Cl. 424-95.000.
Stant Inc.: *See*—
Harris, Robert S., 4,497,290, Cl. 123-179.00G.
Harris, Robert S., 4,497,714, Cl. 210-788.000.
Reitzel, Henry M., 4,497,419, Cl. 220-302.000.
Stanton Magnetics, Inc.: *See*—
Hofer, Alan, 4,498,188, Cl. 381-67.000.
Stasiek, Jan S., to JS Technology, Inc. Reversible ratchet mechanism. 4,497,227, Cl. 81-63.100.
Stauffer Chemical Company: *See*—
Anderson, Thomas M., 4,497,833, Cl. 426-41.000.
Pallos, Ferenc M., 4,497,653, Cl. 71-100.000.
Steetley Refractories Limited: *See*—
Spoors, Gerald; and Pearce, Kenneth W., 4,497,781, Cl. 423-164.000.
Stein Industrie: *See*—
Perrier, Jean, 4,497,466, Cl. 248-588.000.
Stein, Rolf: *See*—
Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, 4,497,193, Cl. 72-302.000.
Steicher, William N.; and Murdock, Michael J., to Kinetronics Corporation. Label dispenser. 4,497,420, Cl. 221-13.000.
Stell, Douglas E., to Digital Equipment Corporation. Apparatus for combining a video signal with graphics and text from a computer. 4,498,098, Cl. 358-22.000.
Stengl, Jens P.: *See*—
Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , 4,497,109, Cl. 29-578.000.
Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, to SAB Nife AB. Rail vehicle disc brake caliper. 4,497,392, Cl. 188-59.000.
Stevenson, Alan R. Liner hanger. 4,497,367, Cl. 166-208.000.
Stewart, David G.: *See*—
Ball, William J.; and Stewart, David G., 4,497,969, Cl. 585-415.000.
Stewart, Robert L.: *See*—
Ingold, Daniel L.; and Stewart, Robert L., 4,497,436, Cl. 236-49.000.
Stewart-Warner Corporation: *See*—
Mayer, William; and Runions, Alton E., 4,498,124, Cl. 362-211.000.
Stone & Webster Engineering Corp.: *See*—
Johnson, Axel R.; and Woebcke, Herman N., 4,497,638, Cl. 48-197.00R.
Storage Technology Partners II: *See*—
Wilkinson, Richard A., Jr., 4,498,165, Cl. 369-270.000.
Yeakley, Lester M.; and Fitzgerald, Karen M., 4,497,465, Cl. 248-466.000.
Stottlemyer, William O.: *See*—
Gorman, Patrick R.; and Stottlemyer, William O., 4,497,980, Cl. 179-81.00B.
Stout, Garry A.: *See*—
Zink, David E.; and Stout, Garry A., 4,497,986, Cl. 200-38.00R.
Stout, Roger P., to Motorola, Inc. Voice coil linear motor with integral capacitor. 4,498,023, Cl. 310-14.000.
Strauss, Theodore R., to Pennwalt Corporation. Check valve for ammonia injector apparatus. 4,497,749, Cl. 261-64.00B.
Streetman, William E., to American Cyanamid Company. Method for the production of melamine/aldehyde filaments. 4,497,934, Cl. 525-58.000.
Streiff, Felix, to Sulzer Brothers Limited. Corrugated sheet packing and method of making. 4,497,753, Cl. 261-95.000.
Strnad, Frank F. Sound attachment for a reed instrument. 4,497,234, Cl. 84-1.040.
Strosberg, Arthur M.: *See*—
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,497,818, Cl. 514-397.000.
Strzelecki, Stanislaus. Method of and apparatus for forming ideograms. 4,498,143, Cl. 364-900.000.
Stump, Charles J., Jr.: *See*—
Nicholson, Nicholas; Dowdy, Edward J.; Holt, David M.; and Stump, Charles J., Jr., 4,497,769, Cl. 376-257.000.
Stupp, Edward H.; and Fellows, Mark W., to North American Philips Corporation. Variable frequency current control device for discharge lamps. 4,498,031, Cl. 315-307.000.
Sturzenegger, Christian; and Blatter, Johann, to Sprecher & Schuh AG. Gas-blast switch. 4,497,991, Cl. 200-148.00A.
Suenaga, Nobuyuki: *See*—
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Suenaga, Norihiro: *See*—
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Sugier, Andre : *See*—
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.
Sugimoto, Yukio: *See*—
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Sugiyama, Kunio: *See*—
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Sukenari, Gunzo: *See*—
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.
Sullivan, Donald E. Dual flush system for controlling flush water in water closet. 4,497,076, Cl. 4-392.000.
Sullivan, James H.: *See*—
Wrobley, A. Ray; and Sullivan, James H., 4,497,117, Cl. 33-276.000.
Sullivan, James W.; and Lewis, Robert T., to Brown & Williamson Tobacco Corporation. Apparatus and method for applying plasticizers to fibrous filter material. 4,497,276, Cl. 118-694.000.
Sullivan, Michael D.; Murtfeldt, Robert L.; and Yelsey, Arthur R., to American Hospital Supply Corporation. Temperature monitoring catheter. 4,497,324, Cl. 128-736.000.
Sulzer Brothers Limited: *See*—
Hintsch, Otto; and Julich, Werner, 4,497,346, Cl. 139-66.00R.
Huber, Max, 4,497,752, Cl. 261-95.000.
Pluss, Raymond, 4,497,751, Cl. 261-94.000.
Schefer, Kurt; and Salvisberg, Kurt, 4,497,450, Cl. 242-18.00A.
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Sumida, Yuzo: *See*—
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Sumitomo Chemical Company, Limited: *See*—
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Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, 4,497,826, Cl. 514-567.000.
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Horwitt, Laurence G., 4,497,226, Cl. 81-474.000.
Suntory Ltd.: *See*—
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.
Sutter, Orlin: *See*—
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Suzuki, Akio: *See*—
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Suzuki, Haruo; and Hashimoto, Shigeyoshi, to Nippondenso Co., Ltd. Die-casting method. 4,497,359, Cl. 164-120.000.
Suzuki, Kenji, to Canon Kabushiki Kaisha. Focus detection apparatus. 4,497,561, Cl. 354-406.000.
Suzuki, Kiyosuke: *See*—
Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, 4,498,090, Cl. 346-159.000.
Suzuki, Shintaro: *See*—
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Suzuki, Tomokazu: *See*—
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Suzuki, Toshimitsu: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.
Suzuki, Yoshihisa: *See*—
Anahara, Meiji; and Suzuki, Yoshihisa, 4,497,089, Cl. 19-288.000.
Sweda International, Inc.: *See*—
Melys, Aleksandras A., 4,497,987, Cl. 200-42.00R.
Swiss Aluminium Ltd.: *See*—
Bucher, Anton, 4,497,260, Cl. 108-56.100.
Mittelmann, Gerhard, 4,497,525, Cl. 312-321.000.
SWS Incorporated: *See*—
Nilsen, Carl J., 4,497,995, Cl. 219-121.0LC.
Syntex (U.S.A.) Inc.: *See*—
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,497,818, Cl. 514-397.000.
Nelson, Peter H., 4,497,827, Cl. 514-381.000.
Szczepanski, Henry, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,497,648, Cl. 71-88.000.
Szenger, Franz, to Carl-Zeiss-Stiftung. Guide means for rolling elements of a ball-race device. 4,497,522, Cl. 308-6.00C.
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., to Singer Company, The. Low torque pattern selecting mechanism for a sewing machine. 4,497,267, Cl. 112-158.00A.
Szucs, Laszlo ; and Tasnadi, Csaba, to Energiagazdalkodasi Intezet. Heat engineering apparatus for carrying out thermodynamical processes comprising a pair of mutually opposite phase transitions of a work medium. 4,497,689, Cl. 202-174.000.
Tabet, Michael A. Rotatable split handled cooking utensil. 4,497,417, Cl. 220-94.00R.
Tadokoro, Eiichi: *See*—
Ryoke, Katsumi; Yamaguchi, Nobutaka; Yoneyama, Takashi; and Tadokoro, Eiichi, 4,497,864, Cl. 428-323.000.
Tagai, Hideo: *See*—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Tai, Ho T., to Lever Brothers Company. Fabric softening composition. 4,497,716, Cl. 252-8.800.
Tai, Wun T.; and Phillips, Kenneth G., to Nalco Chemical Company. Tire tread adhesives. 4,497,927, Cl. 524-475.000.
Takagi, Masatoshi; and Annaka, Wataru, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine of motorcycle. 4,497,293, Cl. 123-196.00A.
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, to Shin-Etsu Chemical Co., Ltd. Organocyclopolysiloxane and a room temperature curable composition containing same. 4,497,943, Cl. 528-22.000.
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, to Matsushita Electric Industrial Co., Ltd.;

and Toyota Jidosha Kabushiki Kaisha. Knocking sensor. 4,497,198, Cl. 73-35.000.
Takahashi, Kenji: *See—*
Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.
Takahashi, Kunihiro, to Seiko Instruments & Electronics Ltd. Tuning fork. 4,498,025, Cl. 310-312.000.
Takahashi, Shinobu: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Takanashi, Nobuyasu, to Terumo Corporation. Package for storage of medical container. 4,497,406, Cl. 206-438.000.
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, to Kanto Denka Kogyo Co., Ltd. Ferromagnetic metallic powders useful for magnetic recording and processes for producing said metallic powders. 4,497,654, Cl. 75-0.5AA.
Takasawa, Yoshio: *See—*
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.
Takeda Chemical Industries, Ltd.: *See—*
Harada, Setsuo; Tsubotani, Shigetoshi; and Asai, Mitsuko, 4,497,742, Cl. 260-245.20T.
Harada, Setsuo; and Okada, Junya, 4,497,803, Cl. 514-450.000.
Yoshimura, Yoshinobu; Hamaguchi, Naoru; and Yashiki, Takatsuka, 4,497,809, Cl. 514-206.000.
Takemura, Akira: *See—*
Itoh, Akira; and Takemura, Akira, 4,497,894, Cl. 430-522.000.
Takemura, Hiroshi: *See—*
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.
Takeno, Hidekazu: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.
Takenouchi, Masanori: *See—*
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.
Takeuchi, Hiroyasu: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Takiguchi, Michitaka: *See—*
Yoshimura, Motokazu; Takiguchi, Michitaka; Horie, Fujio; and Hirata, Koichi, 4,498,078, Cl. 340-679.000.
Talmadge, Thomas E.: *See—*
Clapper, David D.; and Talmadge, Thomas E., 4,497,147, Cl. 52-105.000.
Tamada, Minoru: *See—*
Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, 4,498,067, Cl. 336-65.000.
Tamai, Katsuyuki: *See—*
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.
Tamamura, Junichi: *See—*
Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.
Tamaru, Shigemi: *See—*
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
Tan, Toshimi: *See—*
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
Tanaka, Kazuhiro: *See—*
Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, 4,497,865, Cl. 428-336.000.
Tanaka, Shuji: *See—*
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.
Tanaka, Toshinori: *See—*
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.
Tancrede, Jean M.; and Berejka, Anthony J., to Exxon Research & Engineering Co. Elastomer–ethylene copolymer hot melt systems. 4,497,936, Cl. 525-222.000.
Tandeski, David A.: *See—*
Utter, Robert P.; and Tandeski, David A., 4,497,184, Cl. 62-354.000.
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, to Kenro Corporation. Slide supporting assembly for color-slide duplicator. 4,497,574, Cl. 355-76.000.
Tasai, Masaaki: *See—*
Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, 4,497,111, Cl. 29-734.000.
Tasnadi, Csaba: *See—*
Szucs, Laszlo ; and Tasnadi, Csaba, 4,497,689, Cl. 202-174.000.
Tatemichi, Takaomi: *See—*
Saito, Yasuhiro; and Tatemichi, Takaomi, 4,497,977, Cl. 178-19.000.
Tatsushi, Asakawa; and Shinji, Morozumi, to Kabushiki Kaisha Suwa Seikosha. Reference voltage circuit. 4,498,040, Cl. 323-299.000.
Tauber, Norbert: *See—*
Guse, Rolf; and Tauber, Norbert, 4,497,086, Cl. 19-105.000.
Tawara, Yoshio; and Ohashi, Ken, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a rare earth-cobalt based permanent magnet. 4,497,672, Cl. 148-102.000.
Taylor, Richard J., to EMI Limited. Proximity responsive apparatus. 4,497,252, Cl. 102-214.000.
Teague, W. Dorwin, Jr., to Southern California Gas Co. Regenerative room air exchanger. 4,497,362, Cl. 165-54.000.
Teijin Limited: *See—*
Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, 4,497,095, Cl. 26-2.00R.
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.
Teisan Kabushiki Kaisha: *See—*
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.
Tekirdaglis, Aris. Photoelectric instrument for observing a viewing corrider of interest. 4,498,002, Cl. 250-221.000.
Tektronix, Inc.: *See—*
Philipp, Harald, 4,497,575, Cl. 356-73.100.
Telefonaktiebolaget LM Ericsson: *See—*
Lofmark, Bengt G., 4,498,018, Cl. 307-17.000.
Severinsson, Anders S., 4,498,180, Cl. 372-29.000.
Tellabs, Inc.: *See—*
Fuss, Peter S.; and Kosner, Jerry J., 4,498,123, Cl. 361-427.000.
Teller, Cecil M., II: *See—*
Kwun, Hegeon; and Teller, Cecil M., II, 4,497,209, Cl. 73-601.000.
Temperley, Harry D.; and Joynes, Brian, to Automotive Products Limited. Hydraulic master cylinder. 4,497,175, Cl. 60-581.000.
Tenma, Takumi: *See—*
Katakura, Masayuki; and Tenma, Takumi, 4,498,053, Cl. 330-261.000.
Tennant, William A.: *See—*
Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., 4,497,621, Cl. 425-145.000.
Tensho Electric Industrial Co., Ltd.: *See—*
Kurosawa, Tadashi, 4,497,313, Cl. 128-24.100.
Terashima, Masami: *See—*
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, 4,497,943, Cl. 528-22.000.
Terumo Corporation: *See—*
Takanashi, Nobuyasu, 4,497,406, Cl. 206-438.000.
Teshima, Tsutomu: *See—*
Oono, Hiroshi; and Teshima, Tsutomu, 4,498,005, Cl. 250-327.200.
Tewes, Udo: *See—*
Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, 4,497,588, Cl. 400-645.100.
Texas A&M University: *See—*
Bockris, John O'M.; and Ottagawa, Takaaki, 4,497,698, Cl. 204-129.000.
Texas A&M University System, The: *See—*
Cummins, Joseph M., 4,497,795, Cl. 424-85.000.
Texas Instruments Incorporated: *See—*
Calenda, Ciro; De Filippis, Pietro; and Salvatore, Amedeo, 4,498,069, Cl. 337-354.000.
Caudel, Edward R., 4,498,135, Cl. 364-200.000.
Giolma, William H.; and Morgan, John D., 4,498,020, Cl. 307-261.000.
Henry, Raymond W., 4,498,151, Cl. 364-900.000.
Mohan Rao, G. R., 4,498,155, Cl. 365-189.000.
Th. Goldschmidt AG: *See—*
Bade, Volkbert, 4,497,825, Cl. 514-556.000.
Thayer, Stevan J.: *See—*
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,498,186, Cl. 375-7.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobile track alignment machine. 4,497,255, Cl. 104-8.000.
Thomas, Lowell S.; and Paige, William P., to Dow Chemical Company, The. System for bonding additives to resin particles and resulting composition. 4,497,920, Cl. 524-57.000.
Thomson-CSF: *See—*
Richard, Christian; and Catros, Jean Y., 4,498,102, Cl. 358-133.000.
Thornhill, Howard S.: *See—*
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., 4,497,608, Cl. 414-726.000.
Thorsted, Kenneth G.; and Pennington, John W., to United States of America, Navy. Erodale spin turbine for tube-launched missiles. 4,497,460, Cl. 244-3.300.
Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Stack cooler for dry quenching of coke. 4,497,691, Cl. 202-228.000.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, 4,497,192, Cl. 72-203.000.
Tibbetts, Gary G.: *See—*
Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., 4,497,788, Cl. 423-447.300.
Tihanyi, Jeno : *See—*
Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , 4,497,109, Cl. 29-578.000.
Tilley, George L.; and Doty, Allen W., to Union Oil Company of California. Production of rare earth compounds. 4,497,785, Cl. 423-263.000.
Timoshin, Jury M.: *See—*
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Timperley, Doreen A.: *See*—
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,497,725, Cl. 252-102.000.
Tin, George W.: *See*—
Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., 4,497,791, Cl. 424-1.100.
Titchener, Dorothy M.: *See*—
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,497,725, Cl. 252-102.000.
Titterton, John D. Convertible freight car. 4,497,259, Cl. 105-359.000.
TMCI, Inc.: *See*—
Nellen, William J., 4,497,331, Cl. 131-353.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Itoh, Takuji; and Akitsuki, Ikuo, 4,497,909, Cl. 502-262.000.
Tobiasz, Henry: *See*—
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, 4,497,104, Cl. 29-419.00R.
Tocci, Richard M. Rack. 4,497,413, Cl. 211-202.000.
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, to Canon Kabushiki Kaisha. Variable magnification optical apparatus. 4,497,573, Cl. 355-58.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Aoyama, Shuki, 4,497,993, Cl. 219-10.55C.
Fukuda, Hirokazu; and Hashimoto, Masaru, 4,498,054, Cl. 330-261.000.
Kojima, Masakatu, 4,497,777, Cl. 422-249.000.
Kurosawa, Kei, 4,497,108, Cl. 29-576.00W.
Kuwahara, Hisao, 4,498,041, Cl. 323-316.000.
Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, 4,498,175, Cl. 371-37.000.
Ohhashi, Masahide, 4,498,178, Cl. 371-37.000.
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.
Sasaki, Takafumi, 4,497,513, Cl. 292-217.000.
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, 4,497,210, Cl. 73-602.000.
Yoshimaru, Tomohisa; and Yamamoto, Kazuki, 4,498,107, Cl. 358-256.000.
Tomarin, Seymour A. Synthetic turf carpet game playing surface. 4,497,853, Cl. 428-17.000.
Tomimatsu, Noriyuki: *See*—
Fukushima, Nobuo; and Tomimatsu, Noriyuki, 4,498,081, Cl. 340-793.000.
Tomioka, Kenichi: *See*—
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Toppan Printing Co. Ltd.: *See*—
Iwasawa, Nobuyuki; and Kazato, Keiji, 4,497,856, Cl. 428-35.000.
Toray Industries, Inc.: *See*—
Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, 4,497,865, Cl. 428-336.000.
Torggler, Norbert; and Franz, Dietmar, to Siemens Aktiengesellschaft. Method for emitting additional information in conjunction with message signals to be transmitted over a data switching center. 4,497,976, Cl. 178-3.000.
Torigai, Akiyoshi: *See*—
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, 4,497,573, Cl. 355-58.000.
Toronto General Burying Grounds, The Trustees of The: *See*—
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., 4,497,608, Cl. 414-726.000.
Tournier, Michel, to Esso Societe Anonyme Francaise. Method and device for evaluation and indication of wear condition of motor lubrication. 4,497,200, Cl. 73-64.000.
Towa Glove Co., Ltd.: *See*—
Watanabe, Hiroshi, 4,497,072, Cl. 2-161.00A.
Towae, Friedrich: *See*—
Merger, Franz; and Towae, Friedrich, 4,497,963, Cl. 560-115.000.
Towmotor Corporation: *See*—
Johannson, Richard J., 4,497,607, Cl. 414-664.000.
Toy, Lester T., to Raychem Corporation. Elastomer based adhesive compositions. 4,497,926, Cl. 524-271.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, 4,497,140, Cl. 51-101.00R.
Toyoshima, Kumao: *See*—
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, 4,497,395, Cl. 192-4.00A.
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Masuda, Yoshihiko, 4,497,335, Cl. 137-244.000.
Transac-Alcatel: *See*—
Decavele, Dominique; and Fournier, Jean-Pierre, 4,498,000, Cl. 235-380.000.
Transformatoren Union Aktiengesellschaft: *See*—
Reiplinger, Erich, 4,497,387, Cl. 181-202.000.
Tressler, John H., III: *See*—
Mitchell, Gordon L.; and Tressler, John H., III, 4,497,544, Cl. 350-353.000.
Trimble, Lloyd C.: *See*—
Wenzel, James G.; and Trimble, Lloyd C., 4,497,342, Cl. 137-565.000.
Trobaugh, Arnold G., to Johnson Service Company. Control air exhaust for humidistat. 4,497,435, Cl. 236-44.00A.
Tropicana Products, Inc.: *See*—
Bonnell, James M., 4,497,838, Cl. 426-429.000.
Trovati, Aldo, to RESEM, S.p.A. Aqueous dispersions of polyurethanes from oligo urethanes having unsaturated terminal groups. 4,497,932, Cl. 524-591.000.
Troyer, Scott D.: *See*—
Marshall, Cary S.; and Troyer, Scott D., 4,497,697, Cl. 204-73.00R.
True, Thomas T.; Good, William E.; and Bates, William C., to General Electric Company. Light valve projection system with improved vertical resolution. 4,498,101, Cl. 358-62.000.
Trukenbrod, Karl: *See*—
Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, 4,497,911, Cl. 521-56.000.
Truth Incorporated: *See*—
Vetter, Gregory J., 4,497,135, Cl. 49-280.000.
Trutzschler GmbH & Co. KG: *See*—
Guse, Rolf; and Tauber, Norbert, 4,497,086, Cl. 19-105.000.
TRW Inc.: *See*—
Tseng, Chong-Wei W., 4,498,168, Cl. 370-85.000.
Tseng, Chong-Wei W., to TRW Inc. Communication network and method for its use. 4,498,168, Cl. 370-85.000.
Tsentralny Iauchno-Issledovatelsky Dizelny Institut: *See*—
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.
Tsuboi, Shinichi: *See*—
Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,497,804, Cl. 514-92.000.
Tsubotani, Shigetoshi: *See*—
Harada, Setsuo; Tsubotani, Shigetoshi; and Asai, Mitsuko, 4,497,742, Cl. 260-245.20T.
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, to Shin-Etsu Chemical Co., Ltd. Composition for plastic magnets. 4,497,722, Cl. 252-62.540.
Tsuji, Syogo: *See*—
Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, 4,497,577, Cl. 356-336.000.
Tsujiuchi, Toshio: *See*—
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, 4,497,140, Cl. 51-101.00R.
Tsutsumi, Shuitsu: *See*—
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.
Tubbs, Paul: *See*—
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Tung, Thomas T.: *See*—
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Turrill, Frank H.: *See*—
Sawran, William R.; Turrill, Frank H.; Newman, John W.; Hall, Norman W.; and Ward, Clifford, 4,497,789, Cl. 423-447.400.
Turtle Wax, Inc.: *See*—
Varga, Stephen I.; and Mattz, Donald P., 4,497,919, Cl. 524-10.000.
Tyrroff, Horst: *See*—
Schmidt, Frank; and Tyrroff, Horst, 4,497,884, Cl. 430-5.000.
Uarco Incorporated: *See*—
Gore, Thomas C., 4,497,509, Cl. 282-11.50A.
Ube Industries, Ltd.: *See*—
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
Uchida, Hiroyasu, to Fuji Xerox Co., Ltd. Apparatus for remotely operating output terminals of a copying machine or the like during self-diagnosis. 4,498,130, Cl. 364-188.000.
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Phased array ultrasonic testing apparatus and testing method therefor. 4,497,210, Cl. 73-602.000.
Uchida, Masao: *See*—
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.
Uchigasaki, Isao: *See*—
Sato, Hidetaka; Uchimura, Shunichiro; Uchigasaki, Isao; and Makino, Daisuke, 4,497,922, Cl. 524-104.000.
Uchimura, Shunichiro: *See*—
Sato, Hidetaka; Uchimura, Shunichiro; Uchigasaki, Isao; and Makino, Daisuke, 4,497,922, Cl. 524-104.000.
Uda, Kiyoko: *See*—
Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, 4,498,067, Cl. 336-65.000.
Ueda, Hideki: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.
Ueda, Hirohisa: *See*—
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, 4,497,550, Cl. 350-584.000.
Uemura, Toshihiko, to Matsuo Electric Company, Ltd. Method of manufacturing solid electrolyte chip capacitors. 4,497,105, Cl. 29-570.000.

Uenishi, Akira: *See*—
Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, 4,497,577, Cl. 356-336.000.
Ukai, Yasuhiro: *See*—
Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.
Ultra Harvesters, Inc.: *See*—
Lehman, Lawrence A., 4,497,088, Cl. 19-202.000.
Umezono, Akimi; Kawasaki, Hironobu; Sato, Takashi; and Hayashi, Tomohiko, to Nippon Steel Corporation. Method for surface treatment of a magnetic amorphous alloy. 4,497,850, Cl. 427-127.000.
Union Camp Corporation: *See*—
Hollis, Samuel D., 4,497,931, Cl. 524-570.000.
Union Carbide Corporation: *See*—
Robeson, Lloyd M.; Harris, James E.; and Maresca, Louis M., 4,497,924, Cl. 524-151.000.
Schilling, Curtis L., Jr.; Williams, Thomas C.; and Wesson, John P., 4,497,787, Cl. 423-345.000.
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Pooley, Frederick D., 4,497,778, Cl. 423-27.000.
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Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., to Lummus Industries, Inc. Apparatus for feeding modules of seed cotton into disperser apparatus. 4,497,085, Cl. 19-80.00R.
van Helden, Robert; and Kramer, Petrus A., to Shell Oil Company. Process for the preparation of nitrophenylalkanols. 4,497,966, Cl. 568-705.000.
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Vatsky, Joel; and Schindler, Edmund S., to Foster Wheeler Energy Corporation. Combustion system and method for a coal-fired furnace utilizing a wide turn-down burner. 4,497,263, Cl. 110-347.000.
Vaughn, John. High torque fastener and driving tool. 4,497,225, Cl. 81-451.000.
Veazey, Sidney E. Mastless sails. 4,497,272, Cl. 114-103.000.
VEB Zentrum fur Forschung Und Technologie Mikroelektronik: *See*—
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Venditti, Michael P.: *See*—
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Kocher, Erich J.; and Kopp, John K., 4,497,181, Cl. 62-139.000.

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Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., to General Tire & Rubber Company, The. Preparation of lithium initiator for the preparation of star polymers. 4,497,748, Cl. 260-665.00R.

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Vogel, Jerald M.; Hooper, Steven J.; and Hand, Jerry L. Apparatus for preventing the transmission of vibrations. 4,497,078, Cl. 5-118.000.

Vogt, Wilhelm; Glaser, Hermann; and Jagers, Erhard, to Hoechst Aktiengesellschaft. Process for making acetic anhydride. 4,497,747, Cl. 260-546.000.

Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, to Nixdorf Computer AG. Printing or typing apparatus with a rotating platen as well as guide devices for the paper. 4,497,588, Cl. 400-645.100.

Vollm, Ernst B., to Maschinenfabrik Schweiter AG. Method and apparatus for preparing and splicing yarn ends. 4,497,165, Cl. 57-22.000.

Von Roll AG: *See*—
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Von Gutfeld, Robert J.: *See*—
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Vorwerk, Frederick E.: *See*—
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Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

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Wada, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for measuring flow velocity. 4,497,203, Cl. 73-204.000.

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Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Apparatus for working pipes. 4,497,100, Cl. 29-27.00A.

Wagner, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for the error-free synchronization of asynchronous pulses. 4,498,176, Cl. 371-47.000.

Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Substrate for liquid chromatography and process for isolating and purifying fat-soluble substance by the liquid chromatography on the substrate. 4,497,710, Cl. 210-635.000.

Wakazawa, Tadashi: *See*—
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Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

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Wang, Kathy K.; and Robinson, Mark L., to Inco Alloys International, Inc. Process for making alloys having coarse, elongated grain structure. 4,497,669, Cl. 148-11.50P.

Ward, Carl E.; and Berthold, Robert V., to Union Carbide Corporation. Tetrahydrotriazines. 4,497,650, Cl. 71-93.000.

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Wason, Satish K., to J. M. Huber Corporation. Thixotropic unsaturated polyester compositions and methods. 4,497,918, Cl. 523-220.000.

Wasserman, Gary L. Processed ferrous metal and process of production. 4,497,671, Cl. 148-16.000.

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Watanabe, Hiroshi, to Towa Glove Co., Ltd. Porous coated glove. 4,497,072, Cl. 2-161.00A.

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Wayne, Robert J.; Laughman, Lanny M.; Mongeon, Robert J.; and Chenausky, Peter P., to United States of America, Army. Modulated infrared laser with two coupled cavities. 4,498,179, Cl. 372-27.000.

Webb, Gerald J.: *See*—
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Weber, Rolf-Dieter: *See*—
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Wedel, Victor J. Ultrasound needle, biopsy instrument or catheter guide. 4,497,325, Cl. 128-754.000.

Wegemund, Bernd: *See*—
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Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, to Bayer Aktiengesellschaft. Medicaments having antihypoxic and ischaemia-protective activity. 4,497,821, Cl. 514-302.000.

Weinberg, Harold N.; Rebick, Charles; and McElrath, Kenneth O., to Exxon Research & Engineering Co. Fluid coking with solvent separation of recycle oil. 4,497,705, Cl. 208-127.000.

Weissner, David W., to Meyco Products, Inc. Disappearing anchor. 4,497,152, Cl. 52-709.000.

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Wendel, Rainer, to Spilker, Susanne. Single-handedly flippable bag holder. 4,497,463, Cl. 248-95.000.

Wendt, Alan C.; and Krakowski, David, to United States Gypsum Company. Drive-in trim system for intersecting hollow wall partitions. 4,497,150, Cl. 52-242.000.

Wenzel, James G.; and Trimble, Lloyd C., to Lockheed Missiles & Space Company, Inc. Flexible retractable cold water pipe for an ocean thermal energy conversion system. 4,497,342, Cl. 137-565.000.

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Werner, William L.; and DuHamel, Raymond H., to Granger Associates. Four wire dual mode spiral antenna. 4,498,084, Cl. 343-792.500.

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West, Burnell G., to Fairchild Camera and Instrument Corp. Temperature stabilized stop-restart oscillator. 4,497,998, Cl. 219-210.000.

West, Donald E., to Game Time, Inc. Playground climber. 4,497,484, Cl. 272-113.000.

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Wetzel, Guenter, to Agfa-Gevaert AG. Arrangement for supplying originals for copying apparatus. 4,497,481, Cl. 271-3.100.

Wheeler, Michael G.: *See*—
McMullen, John W.; Wheeler, Michael G.; Cullingford, Hatice S.; and Sherman, Robert H., 4,497,775, Cl. 422-159.000.

Whitcomb, Carl E., to Oklahoma Agricultural and Mechanical Colleges Acting for and on Behalf of Oklahoma State University, Board of Regents for the. Air-root-pruning container. 4,497,132, Cl. 47-66.000.

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Whitlam, Joseph E.; Richards, Alwyn H.; and Akers, Brian, to Whitlam Holdings Limited of Low Valley Industrial Estate. Method of erecting drop scaffolding, a drop scaffolding structure, and a scaffold coupling therefor. 4,497,389, Cl. 182-150.000.

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Wilburn, Walter R.: *See*—
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Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., to H-C Industries, Inc. Process for making a closure. 4,497,765, Cl. 264-268.000.

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Wilkinson, Richard A., Jr., to Storage Technology Partners II. Apparatus for the centered mounting and unmounting on a device spindle. 4,498,165, Cl. 369-270.000.

Willamette Industries, Inc.: *See*—
[illegible]es, Otto J., 4,497,408, Cl. 206-509.000.

Williams, Alford M.: *See*—
Hurta, Gary L.; Milberger, Lionel J.; and Williams, Alford M., 4,497,369, Cl. 166-368.000.

Williams, Lawrence E.: *See*—
Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., 4,497,791, Cl. 424-1.100.

Williams, Leslie P., to Cause Consequence Analysis, Inc. Foam-applying nozzle having adjustable flow rates. 4,497,442, Cl. 239-437.000.

Williams, Michael F.: *See*—
Lehman, R. Danford, Jr.; and Williams, Michael F., 4,497,492, Cl. 273-411.000.

Williams, Thomas C.: *See*—
Schilling, Curtis L., Jr.; Williams, Thomas C.; and Wesson, John P., 4,497,787, Cl. 423-345.000.

Wilson, Frederick D. Self-adjusting ladder. 4,497,390, Cl. 182-202.000.

Wilson, George R., III: *See*—
Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, 4,497,702, Cl. 208-47.000.

Wilson, Jesse R.: *See*—
Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., 4,498,133, Cl. 364-200.000.

Winchester, Stanley W.: *See*—
Chisholm, Donald M.; Newton, Colin; and Winchester, Stanley W., 4,497,662, Cl. 106-92.000.

Windsor, Harry M.; and Mallion, Andrew J., to Automotive Products Limited. Clutch control system. 4,497,397, Cl. 192-0.076.

Winful, Herbert G.; and Cooperman, Gene D., to GTE Laboratories Incorporated. Optical pulse generator. 4,497,535, Cl. 350-96.120.

Winston Adolph A., to Alberta Gas Chemicals, Incorporated. Artificially sweetened beverage mixes and process therefor. 4,497,835, Cl. 426-72.000.

Wintrell, Reginald; and Anderson, Vaughn R., to Dual Fuels Associates Corporation. Fuel and air mixing apparatus. 4,497,304, Cl. 123-527.000.

Wirosoedirdio, Soegianto: *See*—
Barin, Ihsan; Gamroth, Michael; Hesse, Rolf; and Wirosoedirdio, Soegianto, 4,497,780, Cl. 423-88.000.

Wirz, Armin: *See*—
Mueller, Kurt; and Wirz, Armin, 4,497,626, Cl. 432-9.000.

Wischusen, Henry, III, to Rock-Tenn Company. Combination food tray. 4,497,433, Cl. 229-30.000.

Witkowski, Joseph T., to Schering Corporation. 2-(Pyridinyl)-1,2,4-triazolo[1,5-a]pyrimidines and derivatives useful in increasing cardiac contractility. 4,497,814, Cl. 514-258.000.

Witzke, Horst: *See*—
Deckman, Harry W.; Witzke, Horst; and Wronski, Christopher, 4,497,974, Cl. 136-259.000.

Woebcke, Herman N.: *See*—
Johnson, Axel R.; and Woebcke, Herman N., 4,497,638, Cl. 48-197.00R.

Wolf, Hugo M.: *See*—
Wolf, Leo H.; and Wolf, Hugo M., 4,497,334, Cl. 137-209.000.

Wolf, Leo H.; and Wolf, Hugo M. Cleaning apparatus for liquid delivery systems. 4,497,334, Cl. 137-209.000.

Wolfgang, Neumann: *See*—
Lindemann, Eckhard; and Wolfgang, Neumann, 4,498,108, Cl. 358-283.000.

Wonka, Heinz-Georg: *See*—
Forster, Hilmar; and Wonka, Heinz-Georg, 4,497,414, Cl. 213-76.000.

Wood, Obert R., II: *See*—
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,498,182, Cl. 372-62.000.

Woodfill, Arthur J.: *See*—
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., 4,497,232, Cl. 83-831.000.

Woodley, George M., to King Instrument Corporation. Tape loading machine. 4,497,454, Cl. 242-56.00R.

Woodrow, Harold E., to Morgan Construction Company. Apparatus for bending a rolling mill laying pipe. 4,497,190, Cl. 72-133.000.

Woog, Manfred J. Compact precious metal furnace and recovery method. 4,497,658, Cl. 75-83.000.

Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., to Mobil Oil Corporation. Multistage process for converting olefins or oxygenates to heavier hydrocarbons. 4,497,968, Cl. 585-304.000.

Wright, Dolph D., to General Motors Corporation. Paint color change valve assembly for recirculating paint system. 4,497,341, Cl. 137-563.000.

Wrobel, Peter: *See*—
Cooke, Bernard; and Wrobel, Peter, 4,497,916, Cl. 523-176.000.

Wrobley, A. Ray; and Sullivan, James H. Slope compensating angle gauge. 4,497,117, Cl. 33-276.000.

Wronski, Christopher: *See*—
Deckman, Harry W.; Witzke, Horst; and Wronski, Christopher, 4,497,974, Cl. 136-259.000.

Wudel Inc.: *See*—
Wudel, John A.; and McMillan, Lavar C., 4,497,841, Cl. 426-565.000.

Wudel, John A.; and McMillan, Lavar C., to Wudel Inc. Low calorie dessert mixes and products prepared therefrom. 4,497,841, Cl. 426-565.000.

Wuerzer, Bruno: *See*—
Hagen, Helmut; Markert, Juergen; and Wuerzer, Bruno, 4,497,651, Cl. 71-94.000.

Xerox Corporation: *See*—
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.
Booth, Ronald P., Sr., 4,497,569, Cl. 355-14.00R.
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,497,567, Cl. 355-3.0TR.
Price, Edgar E., 4,497,617, Cl. 350-425.000.

Yabe, Minoru: *See*—
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.

Yabunaka, Kiyoshi: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.

Yagi, Michio: *See*—
Matsushima, Kohji; Nakagawa, Yasutsugu; and Yagi, Michio, 4,497,563, Cl. 354-429.000.

Yamada, Nobuhiko: *See*—
Ogura, Ken; Yamada, Nobuhiko; and Ohmi, Hiroshi, 4,497,693, Cl. 204-15.000.

Yamagata, Tetsuo: *See*—
Inoue, Kazuo; and Yamagata, Tetsuo, 4,497,301, Cl. 123-486.000.

Yamaguchi, Isaburo: *See*—
Yamaguchi, Yozo, 4,497,187, Cl. 66-87.000.

Yamaguchi, Nobutaka: *See*—
Ryoke, Katsumi; Yamaguchi, Nobutaka; Yoneyama, Takashi; and Tadokoro, Eiichi, 4,497,864, Cl. 428-323.000.

Yamaguchi, Yozo, to Yamaguchi, Isaburo. Method of manufacturing a burning wick. 4,497,187, Cl. 66-87.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Grinde, James E., 4,497,220, Cl. 74-792.000.

Yamakawa, Shinzo: *See*—
Nakagawa, Koichi; Maeda, Osamu; and Yamakawa, Shinzo, 4,497,759, Cl. 264-26.000.

Yamamoto, Kazuki: *See*—
Yoshimaru, Tomohisa; and Yamamoto, Kazuki, 4,498,107, Cl. 358-256.000.

Yamamoto, Ryoichi: *See*—
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,497,724, Cl. 252-70.000.

Yamane, Iwao: *See*—
Fujita, Jiro; and Yamane, Iwao, 4,497,266, Cl. 112-121.110.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Murase, Kiyoshi; Mase, Toshiyasu; and Tomioka, Kenichi, 4,497,817, Cl. 548-150.000.

Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, to Kao Corporation. Process for producing highly water absorptive polymer. 4,497,930, Cl. 524-556.000.

Yamasue, Kotaro: *See*—
Nishioka, Akira; Aotani, Yoshimasa; and Yamasue, Kotaro, 4,497,888, Cl. 430-165.000.

Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, to Jujo Paper Co., Ltd. Heat-sensitive recording sheet. 4,498,091, Cl. 346-216.000.

Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, to Hitachi, Ltd. Electron gun for color picture tube. 4,498,026, Cl. 313-414.000.

Yamazaki, Hideo: *See*—
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor photoelectric conversion device. 4,498,092, Cl. 357-2.000.

Yanagita, Hirohisa: *See*—
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.

Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, to Exxon Research & Engineering Co. Process for oxidizing a carboxylic anhydride with heterogeneously prepared vanadium-phosphorus-oxygen containing catalyst composition. 4,497,958, Cl. 549-239.000.

Yano, Ryuji; Chiba, Shinsaku; Yoshida, Kazutoshi; Ishida, Kazuhiro; and Yoshimoto, Shoji, to Hitachi, Ltd. Output signal detectors of magnetic bubble memory devices. 4,498,153, Cl. 365-10.000.

Yano, Ryuji: *See*—
Futami, Toshio; Yoshimoto, Shoji; and Yano, Ryuji, 4,498,152, Cl. 365-1.000.

Yashiki, Takatsuka: *See*—
Yoshimura, Yoshinobu; Hamaguchi, Naoru; and Yashiki, Takatsuka, 4,497,809, Cl. 514-206.000.

Yasuda, Mitsuo: *See*—
Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, 4,497,240, Cl. 98-2.010.

Yasuno, Mitsuo: *See*—
Nagaoka, Mitsuru; and Yasuno, Mitsuo, 4,497,222, Cl. 74-866.000.

Yeakley, Lester M.; and Fitzgerald, Karen M., to Storage Technology Partners II. Pivotal mechanism upon which tracking mirrors and the like used in optical systems may be mounted. 4,497,465, Cl. 248-466.000.

Yeboah, Yaw D.; and Venditti, Michael P., to General Electric Company. Process for hydrolyzing chlorosilanes. 4,497,942, Cl. 528-12.000.

Yelsey, Arthur R.: *See*—
Sullivan, Michael D.; Murtfeldt, Robert L.; and Yelsey, Arthur R., 4,497,324, Cl. 128-736.000.

Yoneyama, Takashi: *See*—
Ryoke, Katsumi; Yamaguchi, Nobutaka; Yoneyama, Takashi; and Tadokoro, Eiichi, 4,497,864, Cl. 428-323.000.

Yonishi, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.

Yoshida, Eiichi: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.

Yoshida, Kazutoshi: *See*—
Yano, Ryuji; Chiba, Shinsaku; Yoshida, Kazutoshi; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,498,153, Cl. 365-10.000.

Yoshida Kogyo K.K.: *See*—
Boser, Ronald J., 4,497,270, Cl. 112-265.200.
Hosooka, Shuuichi; Imai, Tetsuji; and Hori, Haruo, 4,497,103, Cl. 29-418.000.

Yoshida, Kunio, to Sharp Kabushiki Kaisha. Symbol input device for use in electronic translator. 4,498,149, Cl. 364-900.000.

Yoshida, Yasuharu, to NEC Corporation. Demodulation device for composite PSK-PSK modulated waves. 4,498,050, Cl. 329-110.000.

Yoshimaru, Tomohisa; and Yamamoto, Kazuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Document information filing system. 4,498,107, Cl. 358-256.000.

Yoshimoto, Shoji: *See*—
Futami, Toshio; Yoshimoto, Shoji; and Yano, Ryuji, 4,498,152, Cl. 365-1.000.
Yano, Ryuji; Chiba, Shinsaku; Yoshida, Kazutoshi; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,498,153, Cl. 365-10.000.

Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, to Mitsui Toatsu Chemicals, Incorporated. 3-Nitro-4-methylbenzene sulfon-2-chloro-4-nitroanilide and fungicidal composition for the control of plant diseases containing same. 4,497,828, Cl. 514-603.000.

Yoshimura, Motokazu; Takiguchi, Michitaka; Horie, Fujio; and Hirata, Koichi. Sewing machine with a voice warning device. 4,498,078, Cl. 340-679.000.

Yoshimura, Susumu; and Murakami, Mutsuaki, to Matsushita Electric Industrial Co., Ltd. Conductive pyrolytic product and composition using same. 4,497,728, Cl. 252-514.000.

Yoshimura, Yoshinobu; Hamaguchi, Naoru; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Cephalosporin derivatives. 4,497,809, Cl. 514-206.000.

Yoshino, Tadashi; and Mamei, Masayuki, to Matsushita Electric Industrial Co., Ltd. Tape drive control apparatus. 4,497,459, Cl. 242-186.000.

Yoshioka, Takatoshi: *See*—
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.

Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Microwave generated plasma light source apparatus. 4,498,029, Cl. 315-39.000.

Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, to Suntory Ltd. Polypeptide carcinostatic agent. 4,497,799, Cl. 514-9.000.

Yost, James O.: *See*—
Adkins, Richard C.; and Yost, James O., 4,497,445, Cl. 239-590.000.

Young, Bill M.: *See*—
Borchardt, John K.; and Young, Bill M., 4,497,596, Cl. 405-263.000.

Young, Dennis, to British Petroleum Company p.l.c., The. Aromatics production. 4,497,970, Cl. 585-417.000.

Young, James M. Device for magnetically reclaiming oil from water. 4,497,708, Cl. 210-222.000.

Youngworth, Thomas H., to Benson Engineering & Mfg., Inc. Dehumidifier. 4,497,182, Cl. 62-151.000.

Yu, Peter H.: *See*—
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,497,659, Cl. 75-109.000.

Yurdin, Carl; and Monti, Carmel S., to Photographic Peripherals, Inc. Collapsible lens shade. 4,497,549, Cl. 350-581.000.

Zacuto, Philip: *See*—
Ben-Shmuel, Dan; and Zacuto, Philip, 4,497,439, Cl. 237-53.000.

Zahnraderfabrik Renk A.G.: *See*—
Zaunberger, Franz X., 4,497,218, Cl. 74-682.000.

Zaunberger, Franz X., to Zahnraderfabrik Renk A.G. Compact drive assembly. 4,497,218, Cl. 74-682.000.

Zavalsky, Julian P.: *See*—
Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.

Zenith Electronics Corporation: *See*—
Gorski, Richard M., 4,498,028, Cl. 315-15.000.

Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, to Kali-Chemie Pharma GmbH. 2-Azidomethyl-1,4-benzodiazepine compounds. 4,497,740, Cl. 260-244.400.

Zimmer, Bonnie A.: *See*—
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,498,186, Cl. 375-7.000.

Zimmermann, Markus; and Kuhnis, Hans, to Ciba-Geigy Corporation. N-Oxide compounds useful in the treatment of cardiovascular ailments. 4,497,808, Cl. 514-222.000.

Zimmermann, Markus: *See*—
Ostermayer, Franz; and Zimmermann, Markus, 4,497,813, Cl. 514-166.000.

Zink, David E.; and Stout, Garry A., to Emhart Industries, Inc. Line switch assembly for a timing mechanism. 4,497,986, Cl. 200-38.00R.

Zoecon Corporation: *See*—
Lee, Shy-Fuh, 4,497,965, Cl. 568-325.000.

Zulauf, Gary B.; and Charboneau, Ben J., to Gulf & Western Manufacturing Company. Method and apparatus for automatically sensing the level of a liquid in a reservoir. 4,497,205, Cl. 73-313.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., to RAI Research Corporation. Separator membranes for electrochemical cells. Re. 31,824, Cl. 204-159.170.

Dow Chemical Company, The: *See*—
Erickson, Robert E.; and Krajewski, Richard M., Re. 31,822, Cl. 128-156.000.

Erickson, Robert E.; and Krajewski, Richard M., to Dow Chemical Company, The. Absorbent films and laminates. Re. 31,822, Cl. 128-156.000.

Fishter, Robert E.; Lada, Henry; and Manty, Brian A., to United Technologies Corporation. Chemical milling of high tungsten content superalloys. Re. 31,823, Cl. 156-664.000.

Garrett, Thomas C.: *See*—
Raymond, Douglas W.; and Garrett, Thomas C., Re. 31,828, Cl. 371-20.000.

Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, to Robert Bosch GmbH. Metalized recording carrier for recording instruments, and method of its manufacture. Re. 31,827, Cl. 346-135.100.

Jung, Werner: *See*—
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Krajewski, Richard M.: *See*—
Erickson, Robert E.; and Krajewski, Richard M., Re. 31,822, Cl. 128-156.000.

Lada, Henry: *See*—
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., Re. 31,823, Cl. 156-664.000.

Lee, Joseph Y.: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., Re. 31,824, Cl. 204-159.170.

Machell, Greville, to Milliken Research Corporation. Hot melt adhesive bonded pile fabrics. Re. 31,826, Cl. 428-92.000.

Manty, Brian A.: *See*—
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., Re. 31,823, Cl. 156-664.000.

Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, to Scott Paper Company. Method of making nonwoven fabric and product made thereby having both stick bonds and molten bonds. Re. 31,825, Cl. 428-198.000.

Milliken Research Corporation: *See*—
Machell, Greville, Re. 31,826, Cl. 428-92.000.

Nippon Oakki Seizo Kabushiki Kaisha: *See*—
Okamoto, Shimaji, Re. 31,821, Cl. 84-1.130.

Okamoto, Shimaji, to Nippon Oakki Seizo Kabushiki Kaisha. Variable function generator. Re. 31,821, Cl. 84-1.130.

Osteen, David K.: *See*—
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, Re. 31,825, Cl. 428-198.000.

RAI Research Corporation: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., Re. 31,824, Cl. 204-159.170.

Raymond, Douglas W.; and Garrett, Thomas C., to Zehntel, Inc. In-circuit digital tester. Re. 31,828, Cl. 371-20.000.

Robert Bosch GmbH: *See*—
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Scott Paper Company: *See*—
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, Re. 31,825, Cl. 428-198.000.

Sentisi, Joseph C.: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., Re. 31,824, Cl. 204-159.170.

United Technologies Corporation: *See*—
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., Re. 31,823, Cl. 156-664.000.

Vaalburg, Lawrence: *See*—
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, Re. 31,825, Cl. 428-198.000.

Winter, Gerhard: *See*—
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Woerner, Siegfried: *See*—
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Zehntel, Inc.: *See*—
Raymond, Douglas W.; and Garrett, Thomas C., Re. 31,828, Cl. 371-20.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baker, Stanley Z.; and Baker, Benjamin H., to J. T. Eaton & Company, Inc. Trap for rats, mice and other vermin. B1 4,438,584, 2-5-85, Cl. 43-58.000.

Bemis Manufacturing Company: *See*—
Bemis, Richard A.; and Kelly, Gordon, B1 4,319,365, Cl. 4-236.000.

Bemis, Richard A.; and Kelly, Gordon, to Bemis Manufacturing Company. No tool toilet seat hardware. B1 4,319,365, 2-5-85, Cl. 4-236.000.

Cohen Abraham B.; and Heiart, Robert B., to E.I. DuPont de Nemours and Company: Method for making photoresists. B1 4,193,797, Cl. 430-258.000.

E.I. Dupont de Nemours and Company: *See*—Cohen, Abraham B.; and Heiart, Robert B., B1 4,193,797, Cl. 430-258.000.

J. T. Eaton & Company, Inc.: *See*—
Baker, Stanley Z.; and Baker, Benjamin H., B1 4,438,584, Cl. 43-58.000.

LIST OF DESIGN PATENTEES

Alter, Hobart L., to Coast Catamaran Corporation. Sailboat. 277,472, 2-5-85, Cl. D12-303.000.

American Commercial, Incorporated: *See*—
Laslo, Larry R., 277,444, Cl. D7-5.000.

American Safety Razor Company: *See*—
Iten, Clemens A., 277,434, Cl. D6-526.000.

American Tourister, Inc.: *See*—
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,431, Cl. D3-48.000.

Appel, Mel; and Kress, George, to Appel, Mel. Child's chair. 277,432, 2-5-85, Cl. D6-364.000.

AT&T Technologies: *See—*
Genaro, Donald M.; McGarvey, John N.; Stern, Arthur L., Jr.; and Tilley, Alvin R., 277,479, Cl. D14-60.000.
Jackwicz, William V.; Jampathom, Sompoppol; McGarvey, John N.; and Tilley, Alvin R., 277,480, Cl. D14-61.000.
Barber, Jack: *See—*
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,431, Cl. D3-48.000.
Barnik, Edward A., to Black & Decker Inc. Cordless jig saw. 277,451, 2-5-85, Cl. D8-64.000.
Baum, Ronald L.; Leibson, Abraham; and Siegel, A. Neal, to Smith-Kline Beckman Corporation. Bottle cap. 277,459, 2-5-85, Cl. D9-443.000.
Bearn Mecanique Aviation S.A.: *See—*
Ibis, Pierre, 277,506, Cl. D24-24.000.
Becton, Dickinson and Company: *See—*
Lewandowski, Raymond, 277,457, Cl. D9-415.000.
Beker, Gisela. Vest. 277,424, 2-5-85, Cl. D2-190.000.
Benedict, Charles E., to Telescoping Tie Racks, Inc. Extendable tie rack and cover therefor. 277,436, 2-5-85, Cl. D6-315.000.
Berger, Robert M., to Intercon Purchasing Industries (U.S.A.) Ltd. Portable chronometer. 277,461, 2-5-85, Cl. D10-31.000.
Bergstedt, Lowell C.; and Bergstedt, Marie C. Child's clothes rack and growth measuring and registering unit. 277,463, 2-5-85, Cl. D10-71.000.
Bergstedt, Lowell C.; and Bergstedt, Marie C. Child's clothes rack and growth measuring and registering unit. 277,464, 2-5-85, Cl. D10-71.000.
Bergstedt, Marie C.: *See—*
Bergstedt, Lowell C.; and Bergstedt, Marie C., 277,463, Cl. D10-71.000.
Bergstedt, Lowell C.; and Bergstedt, Marie C., 277,464, Cl. D10-71.000.
Bescherer, Robert E. Suet feeder. 277,514, 2-5-85, Cl. D30-14.000.
Black & Decker Inc.: *See—*
Barnik, Edward A., 277,451, Cl. D8-64.000.
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, to American Tourister, Inc. Luggage. 277,431, 2-5-85, Cl. D3-48.000.
Bosch-Siemens Hausgerate GmbH: *See—*
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Vetter, Roland; and Feil, Rolf, 277,449, Cl. D7-346.000.
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Hamilton, William R. Casing handling equipment. T105,101, 2-5-85, Cl. 294-90.000.

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124	4,497,113

CLASS 33

41 D	4,497,114
174 R	4,497,115
265	4,497,116
276	4,497,117
366	4,497,118
464	4,497,119

CLASS 34

15	4,497,120
23	4,497,121
68	4,497,122

CLASS 36

32 R	4,497,123

CLASS 40

2 R	4,497,124
10 R	4,497,125
124.1	4,497,126
367	4,497,127
405	4,497,128

CLASS 43

21.2	4,497,129
58	B1 4,438,584
98	4,497,130
131	4,497,131

CLASS 44

15 R	4,497,636

CLASS 47

66	4,497,132

CLASS 48

111	4,497,637
197 R	4,497,638

CLASS 49

31	4,497,133
91	4,497,134
280	4,497,135
481	4,497,136
496	4,497,137

CLASS 51

3	4,497,138
95 LH	4,497,139
101 R	4,497,140
168	4,497,141
218 R	4,497,142
248	4,497,143
284 R	4,497,144
307	4,497,639

CLASS 52

1	4,497,145
12	4,497,146
105	4,497,147
126.3	4,497,148
174	4,497,149
242	4,497,150
520	4,497,151
709	4,497,152
745	4,497,153
	4,497,154

CLASS 53

331.5	4,497,155
399	4,497,156
428	4,497,157
	4,497,158
556	4,497,159

CLASS 55

16	4,497,640
94	4,497,641
422	4,497,642

CLASS 56

6	4,497,160
13.6	4,497,161
14.6	4,497,162
341	4,497,163

CLASS 57

6	4,497,164
22	4,497,165
263	4,497,166
328	4,497,167
401	4,497,168

CLASS 59

84	4,497,169

CLASS 60

39.03	4,497,170
39.75	4,497,171
226.1	4,497,172
495	4,497,173
521	4,497,174
581	4,497,175
584	4,497,176
641.12	4,497,177

CLASS 62

55	4,497,178
59	4,497,179
63	4,497,180
139	4,497,181
151	4,497,182
295	4,497,183
354	4,497,184
468	4,497,185

CLASS 63

13	4,497,186

CLASS 65

4.21	4,497,643
14	4,497,644
107	4,497,645

CLASS 66

87	4,497,187

CLASS 71

3	4,497,646
76	4,497,647
88	4,497,648
	4,497,649
93	4,497,650
94	4,497,651
	4,497,652
100	4,497,653

CLASS 72

40	4,497,188
51	4,497,189
133	4,497,190
202	4,497,191
203	4,497,192
302	4,497,193
356	4,497,194
402	4,497,195
405	4,497,196
453.17	4,497,197

CLASS 73

35	4,497,198
61.1 C	4,497,199
64	4,497,200
119 A	4,497,201
202	4,497,202
204	4,497,203
304 C	4,497,204
313	4,497,205
382 R	4,497,206
432 R	4,497,207
584	4,497,208
601	4,497,209
602	4,497,210
606	4,497,211
861.12	4,497,212
862.38	4,497,213
863.12	4,497,214

CLASS 74

89.15	4,497,215
475	4,497,216
512	4,497,217
682	4,497,218
790	4,497,219
792	4,497,220
793	4,497,221
866	4,497,222
	4,497,223

CLASS 75

0.5 AA	4,497,654
34	4,497,655
60	4,497,656
83	4,497,657
	4,497,658
109	4,497,659
240	4,497,660
256	4,497,661

CLASS 81

57.34	4,497,224
63.1	4,497,227
451	4,497,225
474	4,497,226

CLASS 82

1 C	4,497,228

CLASS 83

76	4,497,229
600	4,497,230
663	4,497,231
831	4,497,232
873	4,497,233

CLASS 84

1.04	4,497,234
1.13	Re.31,821
1.19	4,497,235
298	4,497,236
322	4,497,237
421	4,497,238

CLASS 89

198	4,497,239

CLASS 98

2.01	4,497,240
40.25	4,497,241
115.3	4,497,242

CLASS 99

323	4,497,243
494	4,497,244
542	4,497,245

CLASS 100

35	4,497,246
214	4,497,247

CLASS 101

120	4,497,249
350	4,497,250

CLASS 102

202.6	4,497,251
214	4,497,252
476	4,497,253

CLASS 104

1 R	4,497,254
8	4,497,255
11	4,497,256
27	4,497,248

CLASS 105

215 C	4,497,257
248	4,497,258
359	4,497,259

CLASS 106

92	4,497,662

CLASS 108

56.1	4,497,260

CLASS 109

2	4,497,261

CLASS 110

234	4,497,262
347	4,497,263

CLASS 111

73	4,497,264
86	4,497,265

CLASS 112

121.11	4,497,266
158 A	4,497,267
169	4,497,268
262.3	4,497,269
265.2	4,497,270

CLASS 114

75	4,497,271
103	4,497,272

CLASS 118

50	4,497,273
221	4,497,274
268	4,497,275
694	4,497,276
733	4,497,277

CLASS 119

26	4,497,278
29	4,497,279
51.11	4,497,280

CLASS 122

248	4,497,281
379	4,497,282
451.1	4,497,283

CLASS 123

41.47	4,497,284
41.65	4,497,285
52 M	4,497,286
	4,497,288
52 MC	4,497,287
90.27	4,497,289
90.33	4,497,307
179 BG	4,497,291
179 G	4,497,290
195 H	4,497,292
196 A	4,497,293
276	4,497,309
357	4,497,294
374	4,497,295
440	4,497,296
	4,497,297
450	4,497,298
451	4,497,299
463	4,497,300
486	4,497,301
489	4,497,302
501	4,497,303
527	4,497,304
556	4,497,305
620	4,497,306

CLASS 126

242	4,497,308
292	4,497,310
425	4,497,311

CLASS 128

1 R	4,497,312
24.1	4,497,313
75	4,497,314
78	4,497,315
94	4,497,316
127	4,497,317
156	Re.31,822
202.28	4,497,318
303.1	4,497,319
305	4,497,320
330	4,497,321
660	4,497,322
685	4,497,323
736	4,497,324
754	4,497,325
785	4,497,326

CLASS 130

27 K	4,497,328
27 T	4,497,327

CLASS 131

235 R	4,497,329
291	4,497,330
353	4,497,331

CLASS 134

4	4,497,663
22.12	4,497,664

CLASS 136

212	4,497,973
259	4,497,974

CLASS 137

15	4,497,332
122	4,497,333
209	4,497,334
244	4,497,335
	4,497,336
247.25	4,497,337
467	4,497,338
495	4,497,339
556	4,497,340
563	4,497,341
565	4,497,342
614.06	4,497,343
797	4,497,344

CLASS 138

39	4,497,345

CLASS 139

66 R	4,497,346
449	4,497,347

CLASS 141

2	4,497,348
19	4,497,349
206	4,497,350
329	4,497,351

CLASS 142

48	4,497,352

CLASS 144

1 R	4,497,353

CLASS 145

4	4,497,354
24	4,497,355

CLASS 148

1.5	4,497,665
6.15 R	4,497,666
	4,497,667
6.15 Z	4,497,668
11.5P	4,497,669
12 R	4,497,670
16	4,497,671
102	4,497,672
127	4,497,673
156	4,497,674
191	4,497,675

CLASS 149

2	4,497,676

CLASS 156

89	4,497,677
244.11	4,497,678
251	4,497,679
345	4,497,680
363	4,497,681
384	4,497,682
603	4,497,683
643	4,497,684
647	4,497,685
651	4,497,686
659.1	4,497,687
664	Re.31,823

CLASS 160

135	4,497,356
199	4,497,357

CLASS 162

181.1	4,497,688

CLASS 164

80	4,497,358
120	4,497,359
454	4,497,360

CLASS 165

7	4,497,361
54	4,497,362
95	4,497,363
134 R	4,497,364
164	4,497,365

CLASS 166

150	4,497,366
208	4,497,367
	4,497,368
368	4,497,369
372	4,497,370
377	4,497,371
381	4,497,372

CLASS 169

45	4,497,373
46	4,497,374

CLASS 172

10	4,497,375

CLASS 173

1	4,497,376
15	4,497,377
32	4,497,378
39	4,497,379
117	4,497,380

CLASS 174

19	4,497,975

CLASS 175

61	4,497,381
260	4,497,382
289	4,497,383
315	4,497,384

CLASS 177

59	4,497,385
229	4,497,386

CLASS 178

3	4,497,976

19 4,497,977

CLASS 179

9 4,497,978
18 D 4,497,979
81 B 4,497,980
115.5 PS 4,497,981

CLASS 181

202 4,497,387
233 4,497,388

CLASS 182

150 4,497,389
202 4,497,390

CLASS 187

29 R 4,497,391

CLASS 188

59 4,497,392
322.15 4,497,394
322.5 4,497,393

CLASS 192

0.076 4,497,397
4 A 4,497,395
53 E 4,497,396
88 B 4,497,398
111 A 4,497,399

CLASS 198

468 4,497,400

CLASS 200

5 R 4,497,982
4,497,983
11 DA 4,497,984
38 R 4,497,985
4,497,986
42 R 4,497,987
61.85 4,497,988
86 R 4,497,989
144 B 4,497,990
148 A 4,497,991
153 SC 4,497,992

CLASS 202

174 4,497,689
181 4,497,690
228 4,497,691

CLASS 204

15 4,497,692
4,497,693
16 4,497,694
28 4,497,695
46 G 4,497,696
73 R 4,497,697
129 4,497,698
129.2 4,497,699
159.17 Re.31,824
192 P 4,497,700
430 4,497,701

CLASS 206

131 4,497,401
210 4,497,402
219 4,497,403
315.2 4,497,404
378 4,497,405
438 4,497,406
443 4,497,407
509 4,497,408

CLASS 208

47 4,497,702
111 4,497,703
112 4,497,704
127 4,497,705

CLASS 209

538 4,497,409

CLASS 210

130 4,497,706
136 4,497,707
222 4,497,708
489 4,497,709
635 4,497,710
656 4,497,711
691 4,497,712
699 4,497,713
788 4,497,714

CLASS 211

1.5 4,497,410
26 4,497,411
60 T 4,497,412
202 4,497,413

CLASS 213

76 4,497,414

CLASS 215

21 4,497,415

CLASS 219

10.55 C 4,497,993
109 4,497,994
121 LC 4,497,995
124.34 4,497,996
137 PS 4,497,997
210 4,497,998
365 4,497,999

CLASS 220

3.5 4,497,416
94 R 4,497,417
234 4,497,418
302 4,497,419

CLASS 221

13 4,497,420

CLASS 222

144.5 4,497,421
482 4,497,422

CLASS 223

96 4,497,423
111 4,497,424

CLASS 224

324 4,497,425

CLASS 226

187 4,497,426

CLASS 228

20 4,497,427
175 4,497,428
263.18 4,497,429
4,497,430

CLASS 229

6 R 4,497,431
17 B 4,497,432
30 4,497,433

CLASS 235

380 4,498,000

CLASS 236

23 4,497,434
44 A 4,497,435
49 4,497,436
68 B 4,497,437

CLASS 237

8 R 4,497,438
53 4,497,439

CLASS 239

201 4,497,440
230 4,497,441
437 4,497,442
533.3 4,497,443
587 4,497,444
590 4,497,445
661 4,497,446
691 4,497,447

CLASS 241

186.4 4,497,448

CLASS 242

4 R 4,497,449
18 A 4,497,450
37 R 4,497,451
55 4,497,452
55.53 4,497,453
55.55 4,497,456
56 R 4,497,454
56.9 4,497,455
96 4,497,457
107.4 B 4,497,458
186 4,497,459

CLASS 244

3.3 4,497,460
75 R 4,497,461
129.5 4,497,462

CLASS 248

95 4,497,463
220.3 4,497,464
466 4,497,465
588 4,497,466

CLASS 250

214 A 4,498,001
221 4,498,002
223 B 4,498,003
227 4,498,004
327.2 4,498,005
4,498,006
390 4,498,007
452.1 4,498,009
486.1 4,498,008
492.2 4,498,010
507.1 4,498,011
578 4,498,012
4,498,013

CLASS 251

78 4,497,467
117 4,497,468

CLASS 252

8.55 D 4,497,717
8.75 4,497,718
8.8 4,497,715
4,497,716
42.7 4,497,719
52 A 4,497,720
56 R 4,497,721
62.54 4,497,722
62.56 4,497,723
70 4,497,724
102 4,497,725
182.1 4,497,726
500 4,497,727
514 4,497,728

CLASS 254

8 B 4,497,469
134.3 FT 4,497,470
372 4,497,471

CLASS 256

32 4,497,472

CLASS 260

112 R 4,497,730
112.5 R 4,497,729
112.5 T 4,497,731
4,497,732
123.7 4,497,733
239 A 4,497,738
239 BC 4,497,737
239 BF 4,497,739
244.4 4,497,740
245.2 T 4,497,742
245.77 4,497,741
429 R 4,497,743
429.7 4,497,744
465 D 4,497,745
544 C 4,497,746
546 4,497,747
665 R 4,497,748

CLASS 261

64 B 4,497,749
64 C 4,497,750
94 4,497,751
95 4,497,752
4,497,753

CLASS 264

1.4 4,497,754
1.7 4,497,755
1.9 4,497,756
13 4,497,757
23 4,497,758
26 4,497,759
36 4,497,760
66 4,497,761
172 4,497,762
255 4,497,763
261 4,497,764
268 4,497,765
328.8 4,497,766

CLASS 266

44 4,497,473
81 4,497,474
270 4,497,475

CLASS 269

1 4,497,476
303 4,497,477

CLASS 270

53 4,497,478
54 4,497,479
58 4,497,480

CLASS 271

3.1 4,497,481
94 4,497,482

CLASS 272

3 4,497,483
113 4,497,484

CLASS 273

26 A 4,497,485
144 B 4,497,486
146 4,497,487
149 R 4,497,488
158 4,497,489
249 4,497,490
271 4,497,491
411 4,497,492

CLASS 277

2 4,497,493
27 4,497,494
50 4,497,495
134 4,497,496
163 4,497,497

CLASS 279

2 R 4,497,498
119 4,497,499

CLASS 280

1.13 4,497,500
43.12 4,497,501
281 LP 4,497,502
335 4,497,503
673 4,497,504
698 4,497,505
703 4,497,506
704 4,497,507

CLASS 281

34 4,497,508

CLASS 282

11.5 A 4,497,509

CLASS 285

18 4,497,510
158 4,497,511

CLASS 290

4 4,498,014
15 4,498,015
40 R 4,498,016
44 4,498,017

CLASS 292

92 4,497,512
217 4,497,513
336.3 4,497,514

CLASS 296

141 4,497,515
206 4,497,516

CLASS 297

231 4,497,517
341 4,497,518

CLASS 299

8 4,497,519
86 4,497,520

CLASS 301

106 4,497,521

CLASS 307

17 4,498,018
132 E 4,498,019
261 4,498,020
443 4,498,021
473 4,498,022

CLASS 308

6 C 4,497,522

CLASS 310

14 4,498,023
54 4,498,024
312 4,498,025

CLASS 312

265 4,497,524
321 4,497,525

CLASS 313

414 4,498,026
634 4,498,027

CLASS 315

15 4,498,028
39 4,498,029
60 4,498,030
307 4,498,031

CLASS 318

37 4,498,032
261 4,498,033
314 4,498,034
345 D 4,498,035
561 4,498,036
4,498,037
648 4,498,038

CLASS 323

234 4,498,039
299 4,498,040
316 4,498,041

CLASS 324

54 4,498,042
61 P 4,498,043
65 R 4,498,044
71.5 4,498,045
158 F 4,498,046
4,498,047
307 4,498,048
443 4,498,049

CLASS 329

110 4,498,050

CLASS 330

4.3 4,498,051
149 4,498,052
261 4,498,053
4,498,054
284 4,498,055
296 4,498,056
297 4,498,057
300 4,498,058

CLASS 331

1 A 4,498,059

CLASS 333

14 4,498,060
21 A 4,498,061
135 4,498,062
173 4,498,063

CLASS 334

7 4,498,064

CLASS 335

79 4,498,065
281 4,498,066

CLASS 336

65 4,498,067

CLASS 337

293 4,498,068
354 4,498,069

CLASS 338

42 4,498,070
308 4,498,071

CLASS 339

17 LC 4,497,526
30 4,497,527
45 M 4,497,528
75 M 4,497,529
89 M 4,497,530
94 M 4,497,531
112 R 4,497,532
143 R 4,497,533

CLASS 340

347 AD 4,498,072
365 S 4,498,073
514 4,498,074
525 4,498,075
572 4,498,076
648 4,498,077
679 4,498,078
725 4,498,079
728 4,498,080
793 4,498,081
825.16 4,498,082

CLASS 343

380 4,498,083
792.5 4,498,084
795 4,498,085
807 4,498,086
915 4,498,087

CLASS 346

135.1 Re.31,827
140 R 4,498,088
4,498,089
159 4,498,090
216 4,498,091

CLASS 350

3.72 4,497,534
96.12 4,497,535
96.21 4,497,536
96.23 4,497,537
4,497,538
164 4,497,539
168 4,497,540
335 4,497,542
337 4,497,543
353 4,497,544
376 4,497,545
410 4,497,546
425 4,497,617
427 4,497,547
560 4,497,548
581 4,497,549
584 4,497,550
626 4,497,541

CLASS 354

67 4,497,551
106 4,497,552
135 4,497,553
160 4,497,554
173.1 4,497,555
212 4,497,556
234.1 4,497,557
303 4,497,558
316 4,497,559
403 4,497,560
406 4,497,561
416 4,497,562
429 4,497,563
442 4,497,564

CLASS 355

3 CH 4,497,566
3 R 4,497,565
3 TR 4,497,567
14 R 4,497,568
4,497,569
16 4,497,570
40 4,497,571
45 4,497,572
58 4,497,573
76 4,497,574

CLASS 356

73.1 4,497,575
335 4,497,576
336 4,497,577

CLASS 357

2 4,498,092
22 4,498,093
4,498,094
23 4,498,095
67 4,498,096

CLASS 358

12 4,498,097
22 4,498,098
31 4,498,099
4,498,100
62 4,498,101
133 4,498,102
148 4,498,103
160 4,498,104
213 4,498,105
4,498,106
256 4,498,107
283 4,498,108
296 4,498,109
342 4,498,110

CLASS 360

27 4,498,111
96.5 4,498,112
128 4,498,113
4,498,114
132 4,498,115

CLASS 361

213 4,498,116
315 4,498,117
384 4,498,118
386 4,498,119
4,498,120
401 4,498,121
414 4,498,122
427 4,498,123

CLASS 362

211 4,498,124
216 4,498,125
220 4,498,126

CLASS 363

5 4,498,127
21 4,498,128

CLASS 364

174 4,498,129
188 4,498,130
200 4,498,131
4,498,132
4,498,133
4,498,134
4,498,135
4,498,136
471 4,498,137
483 4,498,138
518 4,498,139
571 4,498,140
728 4,498,141
900 4,498,142
4,498,143
4,498,144
4,498,145
4,498,146
4,498,147
4,498,148
4,498,149
4,498,150
4,498,151

CLASS 365

1 4,498,152
10 4,498,153
149 4,498,154
189 4,498,155
215 4,498,156

CLASS 366

42 4,497,578
134 4,497,579
190 4,497,580
208 4,497,581

CLASS 367

50 4,498,157

CLASS 368

15 4,497,582
291 4,497,583
294 4,497,584

CLASS 369

32	4,498,158
44	4,498,159
63	4,498,160
75.2	4,498,161
77.1	4,498,162
126	4,498,163
177	4,498,164
270	4,498,165

CLASS 370

9	4,498,166
44	4,498,167
85	4,498,168
	4,498,169
110.1	4,498,170
110.2	4,498,171

CLASS 371

20	Re.31,828
25	4,498,172
30	4,498,173
37	4,498,174
	4,498,175
	4,498,178
47	4,498,176
52	4,498,177

CLASS 372

27	4,498,179
29	4,498,180
38	4,498,181
62	4,498,182
86	4,498,183
92	4,498,184

CLASS 373

93	4,498,185

CLASS 374

158	4,497,585
163	4,497,586

CLASS 375

7	4,498,186
91	4,498,198
117	4,498,187

CLASS 376

142	4,497,767
153	4,497,768
257	4,497,769
272	4,497,770

CLASS 381

67	4,498,188

CLASS 382

30	4,498,189

CLASS 383

28	4,498,190
126	4,498,192

CLASS 384

117	4,497,587
613	4,497,523

CLASS 400

645.1	4,497,588
706	4,497,589

CLASS 405

152	4,497,590
198	4,497,591
202	4,497,592
212	4,497,593
217	4,497,594
261	4,497,595
263	4,497,596
288	4,497,597

CLASS 406

114	4,497,598
132	4,497,599

CLASS 407

53	4,497,600

CLASS 408

156	4,497,601

CLASS 410

69	4,497,602

CLASS 411

34	4,497,603

CLASS 414

131	4,497,604
218	4,497,605
607	4,497,606
664	4,497,607
726	4,497,608
786	4,497,609

CLASS 415

116	4,497,610
191	4,497,611

CLASS 416

198 A	4,497,612
228	4,497,613

CLASS 417

238	4,497,614
310	4,497,615
390	4,497,616

CLASS 418

212	4,497,618

CLASS 420

440	4,497,771
457	4,497,772

CLASS 422

26	4,497,773
73	4,497,774
159	4,497,775
	4,497,776
249	4,497,777

CLASS 423

27	4,497,778
72	4,497,779
88	4,497,780
164	4,497,781
184	4,497,782
213.5	4,497,783
236	4,497,784
263	4,497,785
329	4,497,786
345	4,497,787
447.3	4,497,788
447.4	4,497,789

CLASS 424

1.1	4,497,790
	4,497,791
3	4,497,792
32	4,497,793
81	4,497,794
85	4,497,795
95	4,497,796
118	4,497,797
153	4,497,798
248.51	4,497,811

CLASS 425

75	4,497,619
145	4,497,620
	4,497,621
525	4,497,622
	4,497,623
548	4,497,624

CLASS 426

5	4,497,832
41	4,497,833
42	4,497,834
72	4,497,835
239	4,497,836
398	4,497,837
429	4,497,838
482	4,497,839
560	4,497,840
565	4,497,841
592	4,497,842
602	4,497,843
643	4,497,844
646	4,497,845
660	4,497,846

CLASS 427

3	4,497,847
106	4,497,848
120	4,497,849
127	4,497,850
147	4,497,851
287	4,497,852

CLASS 428

17	4,497,853
	4,497,854
35	4,497,855
	4,497,856
	4,497,857
44	4,497,858
71	4,497,859
92	Re.31,826
156	4,497,860
198	Re.31,825
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220	4,497,862
253	4,497,863
323	4,497,864
336	4,497,865
365	4,497,866
385	4,497,867
400	4,497,868
402	4,497,869
457	4,497,870
473	4,497,871
483	4,497,872
547	4,497,873
551	4,497,874
620	4,497,875
624	4,497,876
628	4,497,877
698	4,497,878

CLASS 429

62	4,497,879
86	4,497,880
91	4,497,881
163	4,497,882
194	4,497,883

CLASS 430

5	4,497,884
106.6	4,497,885
115	4,497,886
138	4,497,887
165	4,497,888
258	B1 4,193,797
260	4,497,889
296	4,497,890
	4,497,891
347	4,497,892
359	4,497,893
522	4,497,894
569	4,497,895

CLASS 431

208	4,497,625

CLASS 432

9	4,497,626
59	4,497,627
179	4,497,628

CLASS 433

201	4,497,629

CLASS 434

224	4,497,630

CLASS 435

161	4,497,896
188	4,497,897

CLASS 436

23	4,497,898
510	4,497,899
511	4,497,900

CLASS 440

8	4,497,631

CLASS 441

30	4,497,632

CLASS 445

7	4,497,633

CLASS 455

1	4,498,193
164	4,498,191
166	4,498,194
205	4,498,195
607	4,498,196
619	4,498,197

CLASS 501

90	4,497,901

CLASS 502

65	4,497,902
85	4,497,903
104	4,497,904
107	4,497,905
110	4,497,906
235	4,497,907
245	4,497,908
262	4,497,909

CLASS 514

2	4,497,800
8	4,497,802
9	4,497,799
15	4,497,801
92	4,497,804
166	4,497,813
	4,497,824
172	4,497,805
189	4,497,806
206	4,497,809
211	4,497,812
222	4,497,807
	4,497,808
	4,497,810
258	4,497,814
277	4,497,830
300	4,497,816
302	4,497,821
381	4,497,827
397	4,497,818
	4,497,819
432	4,497,820
450	4,497,803
512	4,497,823
556	4,497,825
567	4,497,826
592	4,497,822
603	4,497,828
672	4,497,829
717	4,497,831

CLASS 517

274	4,497,815

CLASS 518

700	4,497,910

CLASS 521

56	4,497,911
59	4,497,912
137	4,497,913

CLASS 523

105	4,497,914
156	4,497,915
176	4,497,916
201	4,497,917
220	4,497,918

CLASS 524

10	4,497,919
57	4,497,920
59	4,497,921
104	4,497,922
107	4,497,923
151	4,497,924
269	4,497,925
271	4,497,926
475	4,497,927
502	4,497,928
547	4,497,929
556	4,497,930
570	4,497,931
591	4,497,932
604	4,497,933

CLASS 525

58	4,497,934
181	4,497,935
222	4,497,936
333.1	4,497,937
514	4,497,938

CLASS 526

262	4,497,939
	4,497,940
331	4,497,941

CLASS 528

12	4,497,942
22	4,497,943
49	4,497,944
94	4,497,945
99	4,497,946
174	4,497,947
342	4,497,948

CLASS 534

603	4,497,735
695	4,497,734
855	4,497,736

CLASS 544

27	4,497,949
183	4,497,950
206	4,497,951
344	4,497,952

CLASS 546

99	4,497,953
221	4,497,954
345	4,497,955

CLASS 548

150	4,497,817
194	4,497,956
496	4,497,957

CLASS 549

239	4,497,958
253	4,497,959
386	4,497,960
495	4,497,961

CLASS 556

446	4,497,962

CLASS 560

115	4,497,963

CLASS 562

406	4,497,964

CLASS 568

325	4,497,965
705	4,497,966
885	4,497,967

CLASS 585

304	4,497,968
415	4,497,969
417	4,497,970
658	4,497,971
828	4,497,972

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D2—	190	277,424		483	277,438		377	277,456		303	277,472	D16—	29	277,488		10	277,504
	231	277,425		499	277,442		415	277,457	D14—	3	277,473	D19—	1	277,489		17	277,505
	246	277,426		510	277,441		443	277,458		6	277,474		33	277,490		24	277,506
	309	277,427		526	277,434			277,459			277,475	D21—	65	277,491		28	277,507
	380	277,428	D7—	5	277,444		447	277,460		52	277,476		104	277,492		31	277,508
D3—	18	277,429		43	277,445	D10—	31	277,461			277,477		130	277,493		33	277,509
	28	277,430		105	277,446		70	277,462		58	277,478		136	277,494	D25—	17	277,510
	48	277,431		137	277,447		71	277,463		60	277,479		137	277,495	D26—	68	277,511
D6—	315	277,436		346	277,448			277,464		61	277,480		160	277,496	D28—	63	277,512
	364	277,432			277,449		106	277,465		65	277,481		191	277,497	D29—	8	277,513
	366	277,443	D8—	57	277,450	D11—	41	277,466		84	277,482			277,498	D30—	14	277,514
	384	277,433		64	277,451		155	277,467		86	277,483	D23—	35	277,499		45	277,515
	403	277,435		99	277,452	D12—	147	277,468		100	277,484		71	277,500	D32—	18	277,516
	470	277,437		323	277,453		151	277,469	D15—	3	277,485		123	277,501		22	277,517
	474	277,439		397	277,454		203	277,470		126	277,486		153	277,502		35	277,518
	476	277,440	D9—	307	277,455		211	277,471		149	277,487	D24—	5	277,503			

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